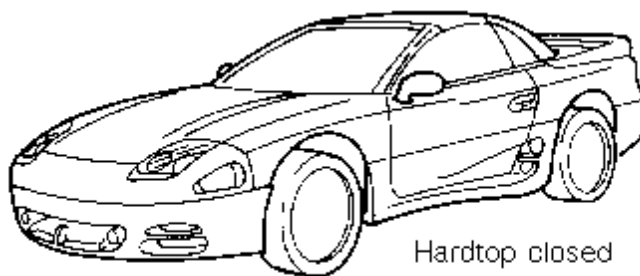




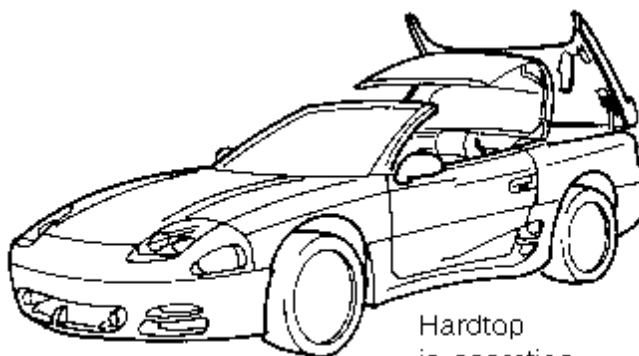
PC User's Manual

**ASC Incorporated
Computerized
Diagnostic System:**

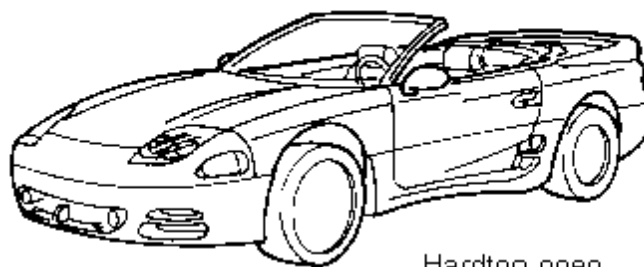
-  **System Diagnostics**
-  **Software Installation**
-  **Auto-configuration**



Hardtop closed



Hardtop
in operation



Hardtop open

MITSUBISHI 3000GT ***SPYDER***

Table of Contents

Introduction	3
Connections and Startup	4
Run Diagnostics Program	8
View DTC Log.....	12
Begin Auto-configuration.....	13
Appendix A: Diagnostic Trouble Codes	23
Appendix B: Change Default Parameters	29
Appendix C: Software Installation	34
Appendix D: Hardware Installation.....	36
Appendix E: Connecting to the Spyder ECU connector	44
Appendix F: Evoscan Support	48

Table of Tables

Table 1 – DTC Codes 00 through 13	23
Table 2 – DTC Codes 14 through 25	24
Table 3 – DTC Codes 26 through 36	25
Table 4 – DTC Codes 37 through 48	26
Table 5 – DTC Codes 49 through 58	27
Table 6 – DTC Codes 59 through 62	28
Table 7 - Hardtop ECU Default Parameters.....	32

Table of Figures

Figure 1 – PC to ECU Hookup	4
Figure 2 - Top_Link Converter Module	36
Figure 3 - USB A/B Cable	36
Figure 4 - Cable "A"	44
Figure 5 - Cable "B"	44
Figure 6 - Spyder DLC location.....	45
Figure 7 - Toplink Cable "A" Drawing.....	46
Figure 8 - Toplink Cable "B" Drawing.....	47
Figure 9 - OBD II Cable Drawing	48
Figure 10 - OBDII Cable	48

Introduction

This PC User's Manual is for the Mitsubishi 3000GT Spyder. This manual should be used in conjunction with the Service Manual Supplement (Volume 3) when servicing or re-pairing the vehicle.

There are specific instructions and cautions that appear in the Service Manual Supplement that should be strictly adhered to. Otherwise, personal injury or damage to the vehicle could result.

Caution:

Mechanical adjustments to, or replacement of components of the retractable hardtop system, with the exception of hard and soft trim, will require that the hardtop ECU be run through "auto-configuration" using the ASC INCORPORATED computerized diagnostic system. When applicable DO NOT perform any adjustment or replacement of those retractable hardtop components without having the latest version of the ASC INCORPORATED diagnostic system.

The Spyder hardtop ECU includes control of 3.5 retractable hardtop axes: hardtop, hard tonneau, tonneau latch/unlatch, and header latch/unlatch.

The hardtop ECU also controls the three vehicle window systems: passenger door window, driver door window, and retractable quarter window system.

Connections and Startup

1. Connect the PC to the ECU

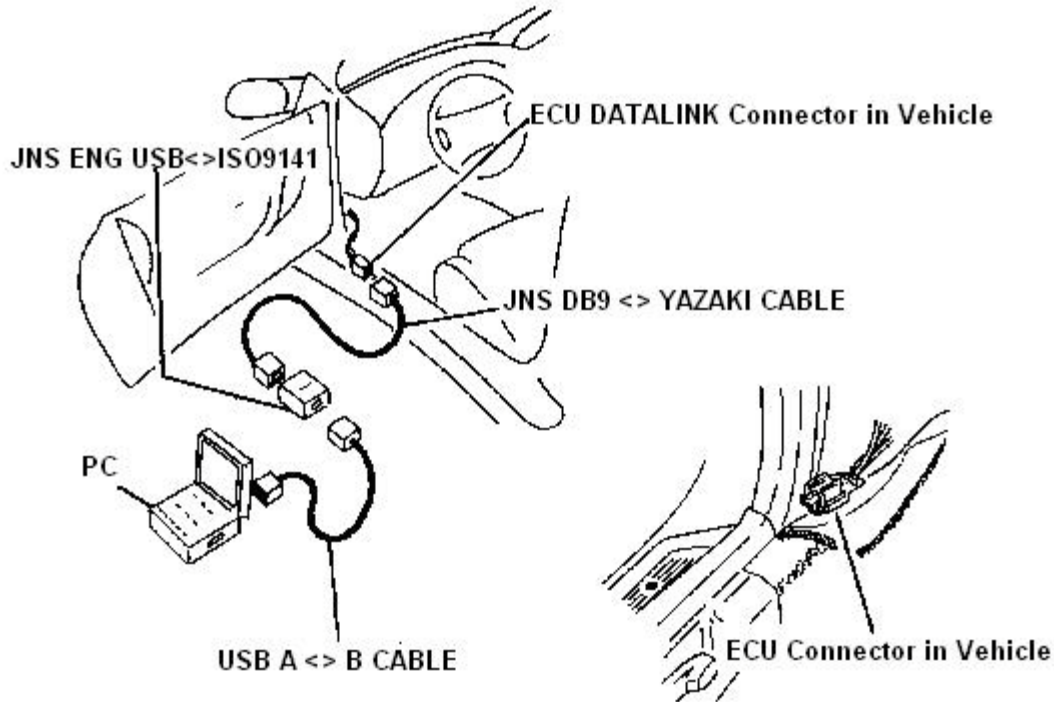


Figure 1 – PC to ECU Hookup

Connect the components as shown in the illustration above. The ECU connector in the vehicle is located behind the carpet at the base of the cowl near the floor.

2. Connect a 12V battery charger to the vehicle battery to maintain battery voltage. Use slow charging of 5 - 10 amps.

Caution:

When batteries are being charged, an explosive gas forms beneath the cover of each cell. Do not smoke near batteries on charge or which have been recently charged. Do not break live circuits at the terminals of the batteries on charge. A spark will occur where the live circuit is broken. Keep all open flames away from the battery.

Battery electrolyte temperature may temporarily be allowed to rise to 55/C (131/F). Increase of electrolyte temperature above 55 /C (131/F) is

harmful to the battery, causing deformation of battery cell, decrease in life of the battery, etc.

3. Turn the ignition switch to the ON position.
4. Wake up the ECU from sleep mode.

The hardtop ECU must be awakened from its sleep mode for the PC to communicate with it. The hardtop ECU will immediately go to sleep after the hardtop has been fully closed or fully opened. Awakening the ECU can be performed several ways:

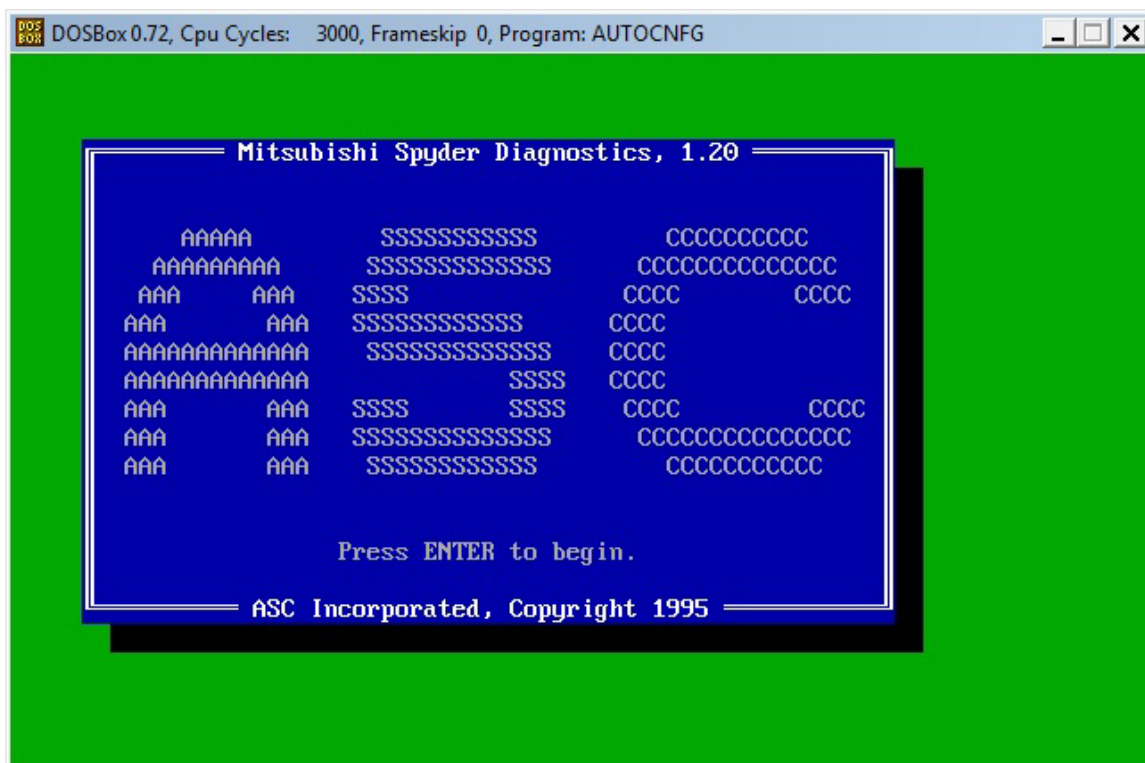
NOTE:

The ECU should be awake if the hardtop or tonneau is not fully open or closed.

- ✎ With the hardtop fully open or closed, press and hold the passenger window switch to keep the ECU awake, or;
- ✎ Momentarily press the hardtop **"OPEN"** switch (if the hardtop is closed) or **"CLOSE"** switch (if the hardtop is open) until the chime and indicator are active.

5. Double Click the ASC Icon to start the program

You will see the opening screen shown below:



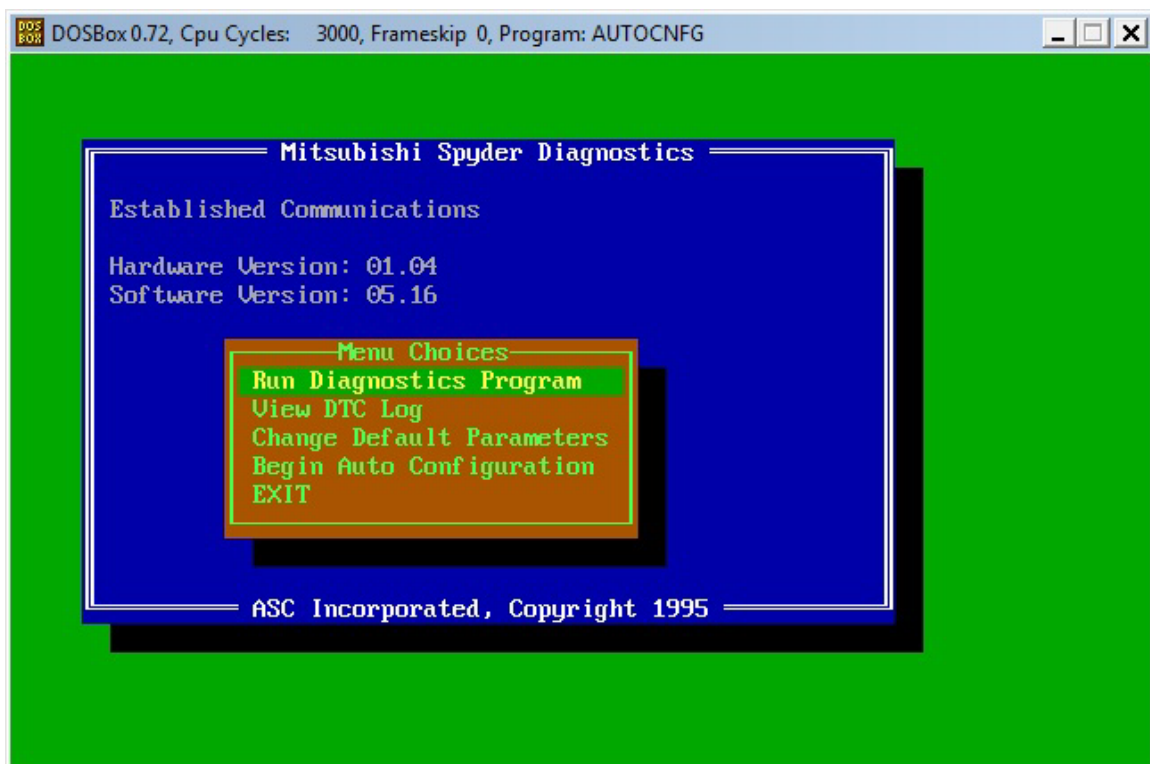
6. Press {ENTER} to begin the program.

7. After {ENTER} is pressed the **DIAGNOSTICS MAIN MENU** will appear.

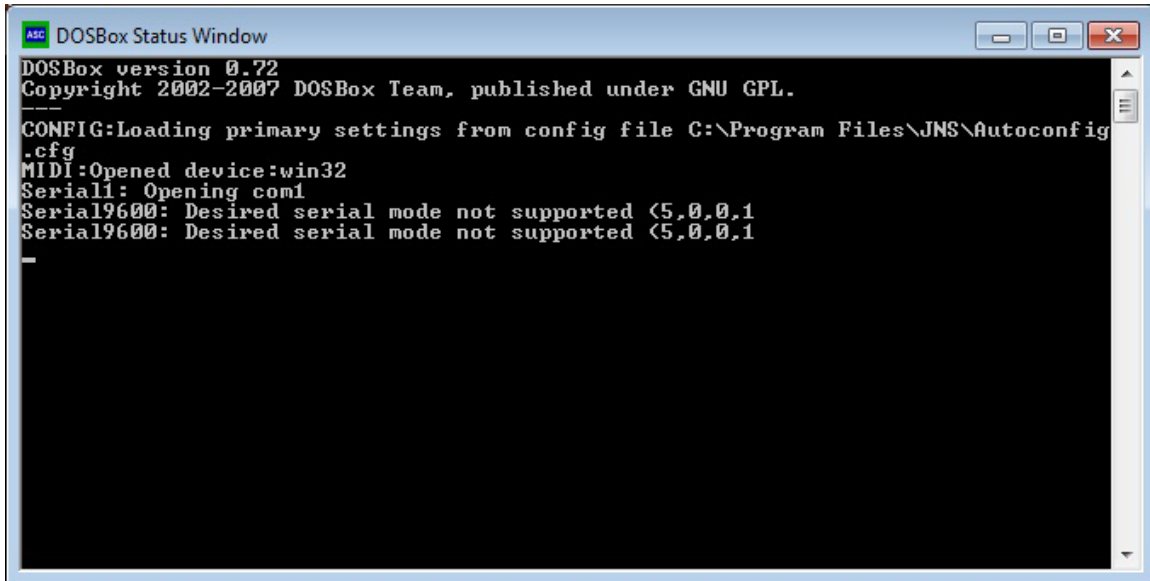
Use the up (↑) or down (↓) arrow keys to highlight the desired selection from the menu. Then press {ENTER} to make your selection.

To end the program, either highlight the “EXIT” selection and press {ENTER}, or press the {Esc} key.

NOTE: If you get a screen with a blank box, you have not established communication with the ECU. Check all connections then repeat Steps 3-6.

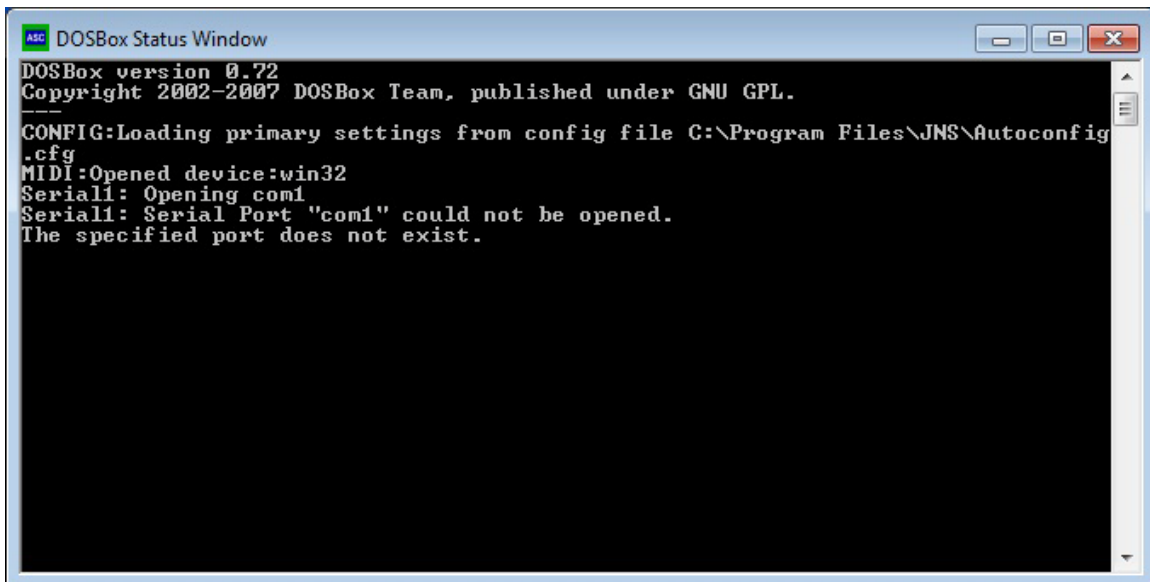


The program automatically starts up in fullscreen mode. At any time you can change the display to a smaller window using **{ALT} {ENTER}**. When this is done you will see that DOSBox maintains two windows for the application – the program window and the status window. The status window normally looks like this screenshot. The serial mode errors are normal and have no effect on proper program operation.



```
ASC DOSBox Status Window
DOSBox version 0.72
Copyright 2002-2007 DOSBox Team, published under GNU GPL.
-----
CONFIG:Loading primary settings from config file C:\Program Files\JNS\Autoconfig
.cfg
MIDI:Opened device:win32
Serial1: Opening com1
Serial9600: Desired serial mode not supported <5,0,0,1
Serial9600: Desired serial mode not supported <5,0,0,1
-
```

COM1 must be available for the program to work properly; otherwise the following error will appear.



```
ASC DOSBox Status Window
DOSBox version 0.72
Copyright 2002-2007 DOSBox Team, published under GNU GPL.
-----
CONFIG:Loading primary settings from config file C:\Program Files\JNS\Autoconfig
.cfg
MIDI:Opened device:win32
Serial1: Opening com1
Serial1: Serial Port "com1" could not be opened.
The specified port does not exist.
```

If COM1 is not available refer to Appendix D, Software Installation.

Run Diagnostics Program

1. To view the diagnostics screen use the up (↑) or down (↓) arrow keys to highlight the **"Run Diagnostics Program"** selection from the **Main Menu**. Press {ENTER} to make your selection. You will see the screen below.

NOTE: If at anytime you want to escape to the **Main Menu** press {Esc}, then choose **Y** or **N**.

2. This run diagnostics screen shows the data the ECU has collected since it left the factory or since it was last replaced. It also shows current status of general ECU inputs and outputs. The screen will constantly update the data as the system is being operated.
3. For continuous updates to the axis position display, make sure the **Loop Mode** is **ON** by pressing the **L** key so that **Loop ON** appears in the top left corner of the display.
4. To return to the **Position Display** mode from any other mode press the **P** key.

DOSBox 0.72, Cpu Cycles: 3000, Frameskip 0, Program: TOPC0104

Mitsubishi Spyder Top Controller V1.04 Copyright (c) 1994 ASC Inc.

COM1	Switch	Motor	Min	Pos	Max
Loop OFF	Top	....	031	213	215
Hold	Tonneau	....	047	066	178
Header Latch	CLOS	....	016	016	128
Header UnLatch	OPEN	....	...	...	...
Header Home Left	CLOS	....		
Header Home Right	CLOS	....		
Tonneau Unlatch L	OPEN	....		
Tonneau Unlatch R	OPEN	....		
Driver Window	....	....	
Passenger Window	....	....	
Q Window Retracted	OPEN	....		
Q Window Extended	CLOS	....		

Battery Voltage	12.4V
Switch Reference	01.5V
Pot Feed	05.0V
Hardware Version	01.04
Firmware Version	05.16

DTC LOG	
1	...
2	...
3	...
4	...
5	...

MSTATE	Wheel Speed NO
31	PRNDL Input GEAR
	Parking Brake PARK
Object Sensor Connctd	YES
Object in Trunk	NO
Cycle Count	1497

ECU Serial # 002856	Req Freeze Frame	Sat Mar 13 14:18:31 2010
---------------------	------------------	--------------------------

L=Loop Mode Tgl.	M=Motor Motion	I=ECU ID	K=Keep Alive
P=Position Info	R=Read Memory	P=Freeze Frame	X=Reset ECU
S=Stop Commun.	T=Addr Inc Toggle	U=Clear DTC Log	U=Read DTC Log
<ESC>=DOS Exit	mmW=Write Mem (Dec)	mmH=Write Mem (Hex)	H or ? = HELP



Clearing the DTC log, if desired.

1. Press the **U** key to ask to clear the DTC log.
2. You will be prompted whether you want to clear the log. Press **Y** if you want to clear the log; the PC will automatically send all the necessary commands to the ECU. Press **N** if you decide not to clear the DTC log.

NOTE:

If you decide to clear the DTC Log, record the DTCs for future reference before clearing the log.



Screen legends

Hardtop Switch: Changes from ". . . ." to **OPEN** or **CLOSE** when the hardtop "**OPEN**"/"**CLOSE**" switch is pressed.

Tonneau Switch: Changes from ". . . ." to **UP** or **DOWN** when the tonneau "**OPEN**"/"**CLOSE**" switch is pressed.

Header Latch/Unlatch: Changes from **CLOS** to **OPEN** depending on the status of the switches. The words **Latch** or **Unlatch** will be highlighted to show the header latch state inside the ECU.

Header Position LH/RH: Changes from **CLOS** to **OPEN** depending on the status of the switches. The switches should register **CLOS** if the hardtop is fully closed.

Tonneau Unlatch Left/Right: Changes from **CLOS** to **OPEN** depending on the status of the switches. The switches should register **CLOS** when the tonneau is fully closed.

Driver Window Switch: The PC does not display the driver window switch status.

Passenger Window Switch: Changes from ". . . ." to **OPEN** or **CLOSE** when the **Passenger Window Switch** is pressed.

Q Window Retracted/Extended: Changes from **CLOS** to **OPEN** depending on the status of the position sensors. The **Extended** sensor should show **CLOS** and the **Retracted** sensor should show **OPEN** when the quarter windows are fully extended (closed). The **Retracted** sensor should show **CLOS** and the **Extended** sensor should show **OPEN** when the quarter windows are fully retracted (open).

Hardtop Motor (hydraulic pump/motor): Changes from ". . . ." to **CLOSE** or **OPEN** when the pump motor is **ON**.

Tonneau Motor (hydraulic pump/motor): Changes from ". . . ." to **OPEN** or **CLOSE** when the pump motor is **ON**.

Header Latch Motor: Changes from ". . . ." to **UP** or **DOWN** when the motor is **ON**.

Tonneau Unlatch Motors: Changes from ". . . ." to **ON** when the motor is **ON**.

Driver Window Motor: The PC displays the driver window motor status only when operated through the hardtop switch.

Passenger Window Motor: Changes from ". . . ." to **UP** or **DOWN** when the motor is **ON**.

Quarter Window Motor: Changes from ". . . ." to **CLOS** or **OPEN** when the motor is **ON**.

Pot (Potentiometer) Readings (Min Pos Max): The center section of the screen shows the measured values of the potentiometer for each axis. Values are in decimal notation, 0 to 255. The **Min** value is the low limit for that axis. The **Max** value is the high limit for that axis. The **Header Latch** entry is a "simulated" axis, and does not reflect a reading from an actual potentiometer.

Battery Voltage: Battery voltage as measured by the ECU (approximate). The ECU will not operate if this voltage is below 10V and above 16V. Hardtop operation becomes very sluggish when the voltage drops below 11V.

Switch Reference: Switch reference voltage as measured by the ECU (approximate). This voltage should be 1.3 - 1.7 volts at all times.

Pot (Potentiometer) Feed : Pot feed voltage as measured by the ECU (approximate). This voltage should be 4.8 - 5.2 volts at all times.

Hardware Version: The hardware revision number reported by the ECU.

Software Version: The software revision number reported by the ECU.

Wheel Speed: Indicates vehicle speed as sensed by the ECU from a pulse train received from an ABS wheel speed sensor. **Yes** means you have wheel speed and the vehicle is moving too fast; the ECU will not allow the hardtop to move. **No** means the vehicle is stationary or moving slowly enough to allow the hardtop to move.

Parking Switch Input: Status of the automatic transmission. **PARK** means that the transmission is in Park and the ECU will allow the top to move. **GEAR** means that the vehicle is in gear and the ECU will not allow the top to move.

Parking Brake: Status of the parking brake. **YES** means that the parking brake is applied and the ECU will allow the top to move. **NO** means that the parking brake is not applied and the ECU will not allow the top to move. NOTE: This applies only to vehicles with manual transmission.

Object(-In-Trunk) Sensor Connected: Indicates **YES** if the Object-In-Trunk Sensor (OTS) is connected, **NO** if it is not connected. The ECU will not allow the hardtop to go into the cargo/hardtop stowage area if the OTS is not connected.

Object In Trunk: Indicates **YES** if the OTS registers an object in the cargo/hardtop stowage area, **NO** if there is no object in there. The ECU will not allow the hardtop to go into the cargo/hardtop stowage area if the OTS registers an object in there.

Cycle Count: Number of complete hardtop system cycles (full close-to-full open-to-full close = one complete cycle) since the vehicle left the factory or since the ECU was last replaced.

DTC Log: Indicates the status of the DTCs and displays up to 5 entries. The first number is the entry number (1-5). The second number is the DTC. The third number is the number of times this error has been logged. If the fault is active, the DTC is highlighted.

5. Press **M** to access the Motor Motion section of the diagnostic program. The password is **CHERRY** (as we know now that the Top ECU was subcontracted by ASC to Cherry Electric).

COM1 <<<Motor>>>	Switch	Motor	Min	Pos	Max
Loop ON	Top	.... *....*	031	213	215
Hold	Tonneau	....	047	066	178
Header Latch	CLOS	....	016	016	128
Header UnLatch	OPEN	....	...	...	...
Header Home Left	CLOS	....		
Header Home Right	CLOS	....		
Tonneau Unlatch L	OPEN	....		
Tonneau Unlatch R	OPEN	....		
Driver Window	....	....	
Passenger Window	....	....	
Q Window Retracted	OPEN	....		
Q Window Extended	CLOS	....		

Battery Voltage	12.4V
Switch Reference	01.5V
Pot Feed	05.0V
Hardware Version	01.04
Firmware Version	05.16

DTC LOG	
1	... ..
2	... ..
3	... ..
4	... ..
5	... ..

MSTATE	Wheel Speed	NO
31	PRNDL Input	GEAR
	Parking Brake	PARK
	Object Sensor Connctd	YES
	Object in Trunk	NO
	Cycle Count	

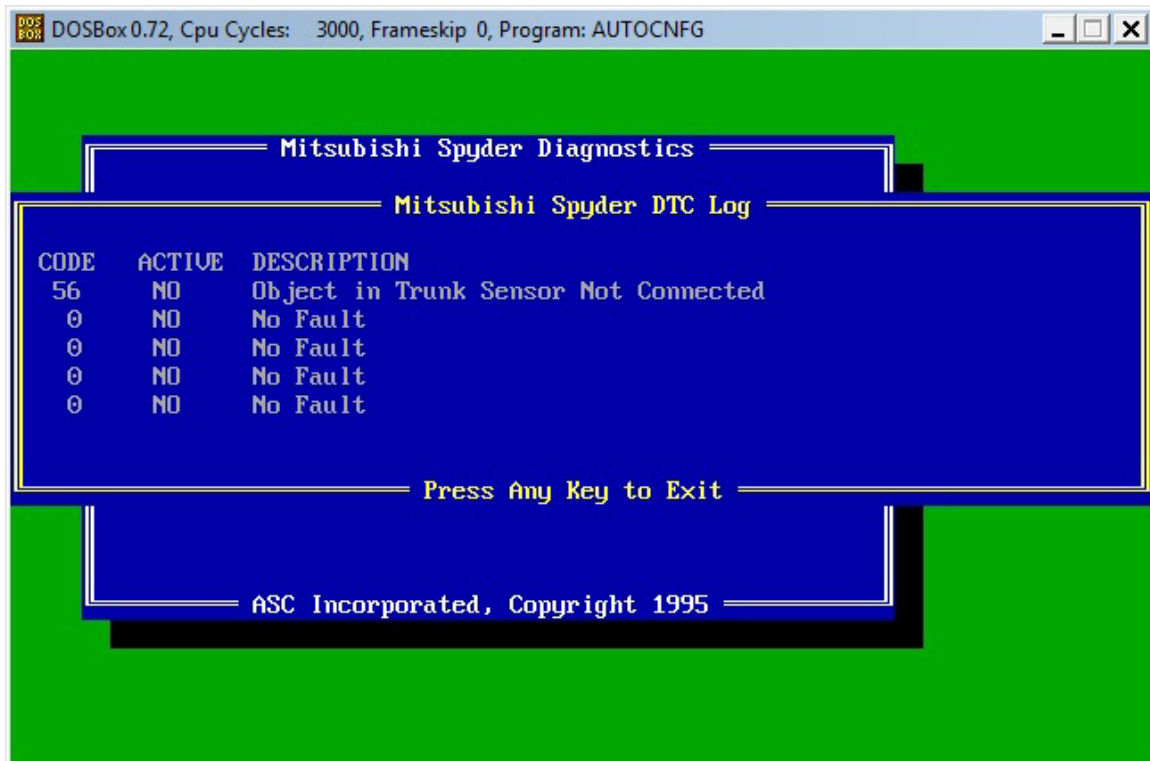
ECU Serial # 002856	Read Memory	Sat Mar 13 14:15:43 2010
---------------------	-------------	--------------------------

Command = 05 23 00 00 00 01 29

Use the up (↑) or down (↓) arrow keys to select the motor(s) to control and then hit the **{ENTER}** to make your selection (the selected motor(s) will have *....* highlighted). Then use the Top Open/Close switch in the car to actuate the motor(s). When finished with motor motion press **{Esc}** or **P** to return to the **Position Display**.

View DTC Log

1. Use the up (↑) or down (↓) arrow key to highlight “**View DTC Log**” on the **Main Menu** and press {ENTER}. You will see a screen similar to the figure below:



2. If there are active DTC faults (those with **YES** in the **ACTIVE** column), correct these conditions and clear the DTC log before proceeding with auto-configuration. Press any key to return to the **Main Menu**.
3. For complete descriptions of the DTCs, refer to the Service Manual Supplement (Volume 3) or see Appendix A.

Begin Auto-configuration

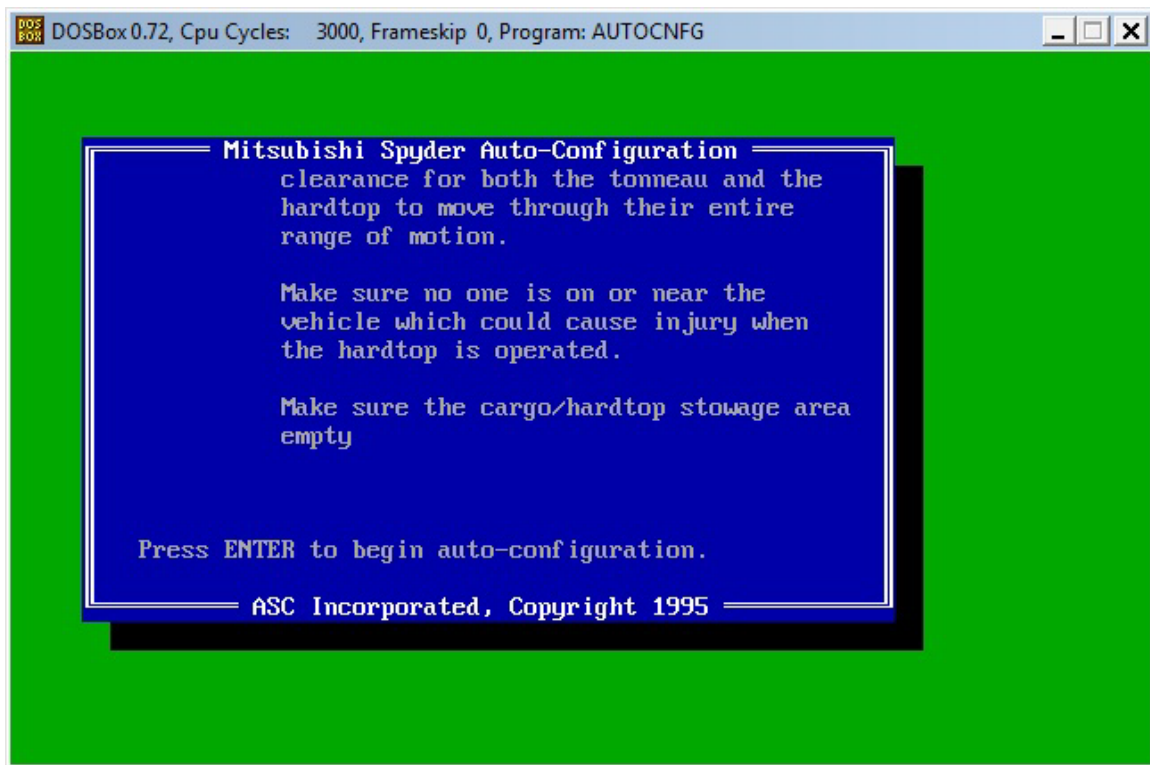
Auto-configuration consists of moving each axis, one at a time and automatically changing and recording the end limits.

1. Press the up (↑) or down (↓) arrow to highlight "**Begin Auto Configuration**" on the **Main Menu**. Press **{ENTER}** to make this selection.

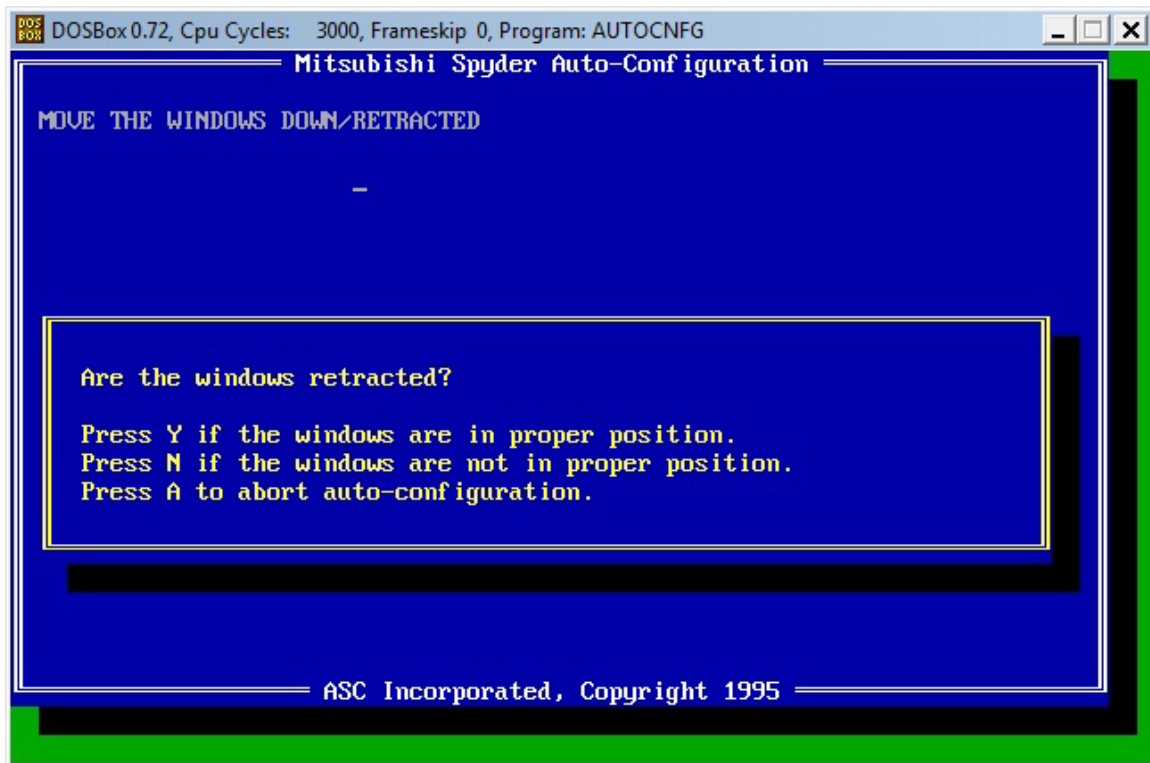
The PC will begin by setting up a number of parameters in the ECU. This may take several seconds. You will then see the warning screen below.

2. Press **{ENTER}** to continue with auto-configuration.

NOTE: You may return to the **Main Menu** at any time during auto-configuration by pressing the **{Esc}** key.

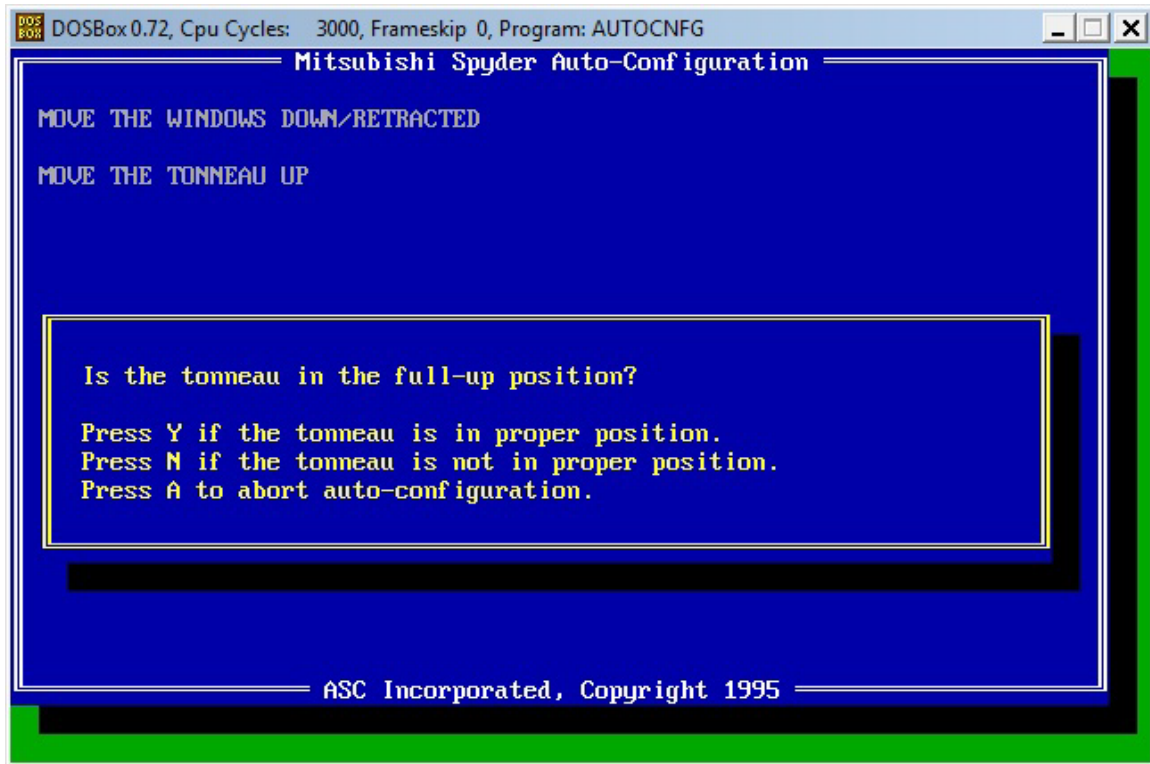


3. The PC will prompt you to **Press Hardtop OPEN Switch**. The door and quarter windows will begin to open. Hold the switch until you receive a prompt to **Release Hardtop OPEN Switch**. When the switch is released the following screen will appear.



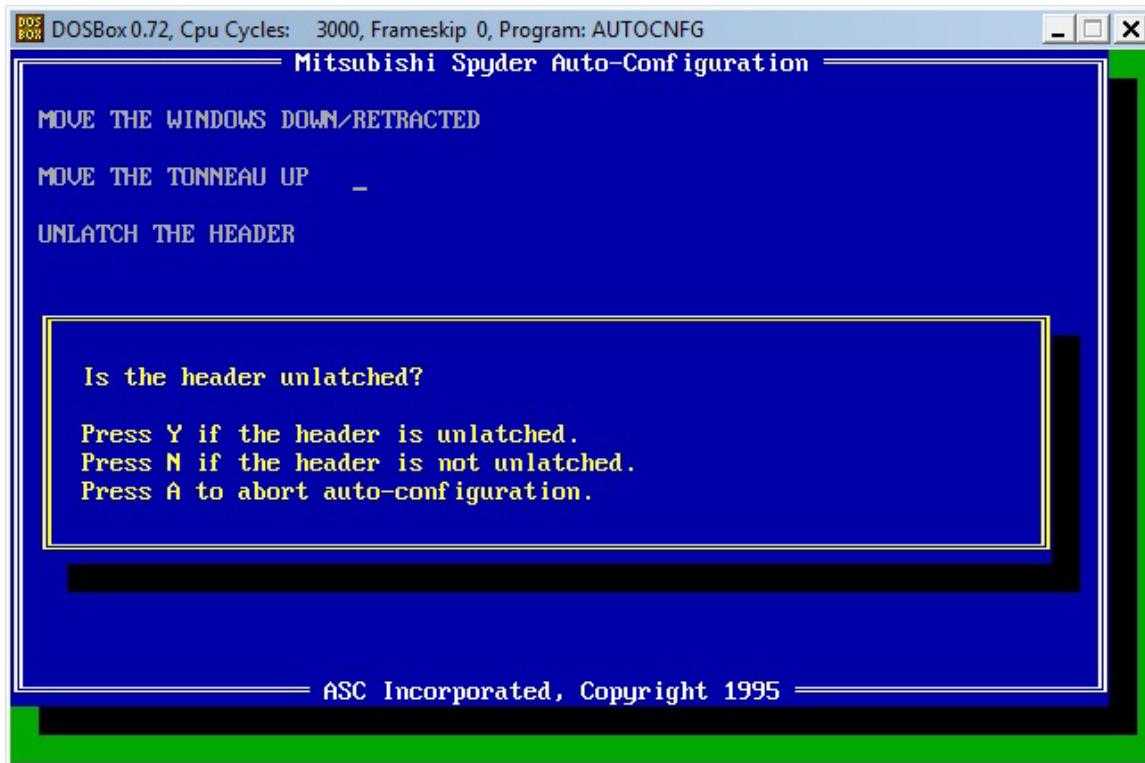
NOTE: If the windows are not fully retracted and **N** has been pressed, press and hold the **hardtop OPEN switch** again. If the windows are now fully retracted, press **Y** to continue. If the windows are still not fully retracted, press **A** to, abort auto-configuration. Diagnose and repair the problem and begin auto-configuration again.

4. When Step 3 is complete and **Y** has been pressed the PC will prompt you to **Press Hardtop OPEN Switch**. The hard tonneau will unlatch and begin to open. Hold the switch until a prompt is received to **Release Hardtop OPEN Switch**. When the switch is released the following screen will appear.



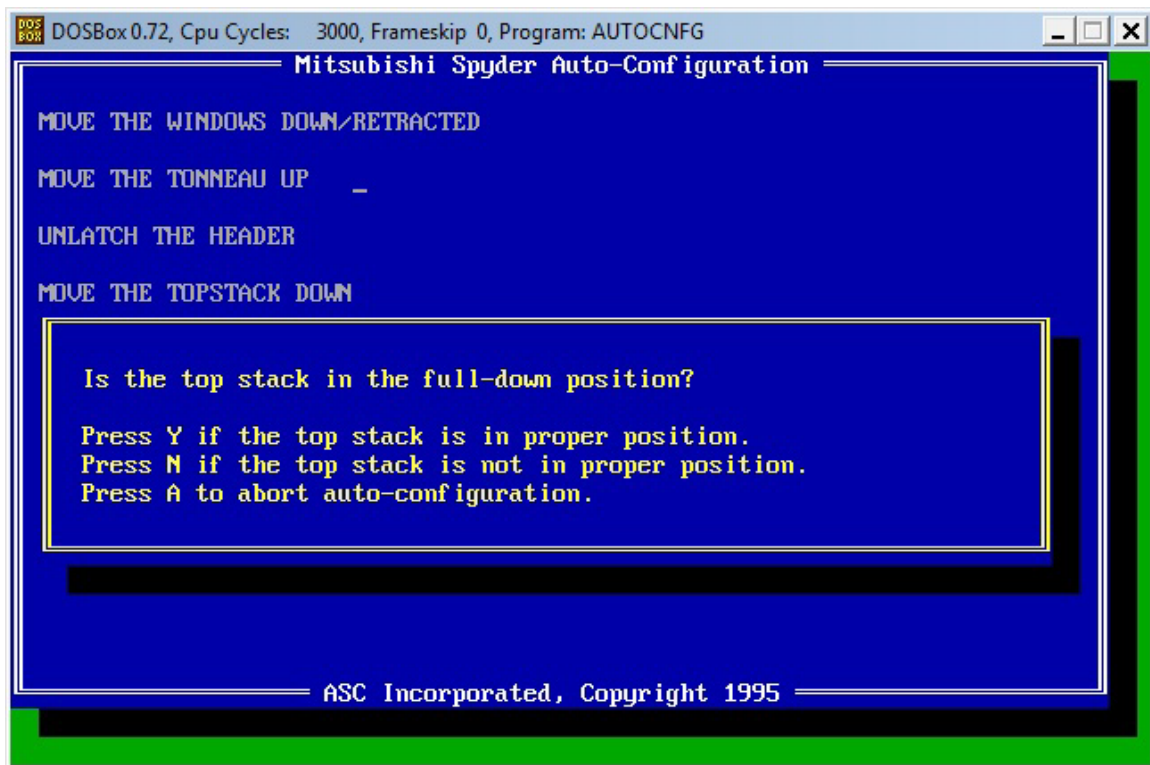
NOTE: If the tonneau is not fully open and **N** has been pressed, press and hold the **hardtop OPEN switch** again. If the tonneau is now fully open, press **Y** and continue. If the tonneau is still not fully open, press **A** to abort auto-configuration. Diagnose and repair the problem and begin auto-configuration again.

5. When Step 4 is complete and **Y** has been pressed the PC will prompt you to **Press Hardtop OPEN Switch**. The header latches will unlatch. Hold the switch until a prompt is received to **Release Hardtop OPEN Switch**. When the switch is released the following screen will appear.



NOTE: If the header is not fully unlatched and **N** has been pressed, press and hold the **hardtop OPEN switch** again. If the header is now unlatched, press **Y** and continue. If the header is still not unlatched press **A** to abort auto-configuration. Diagnose and repair the problem and begin auto-configuration again.

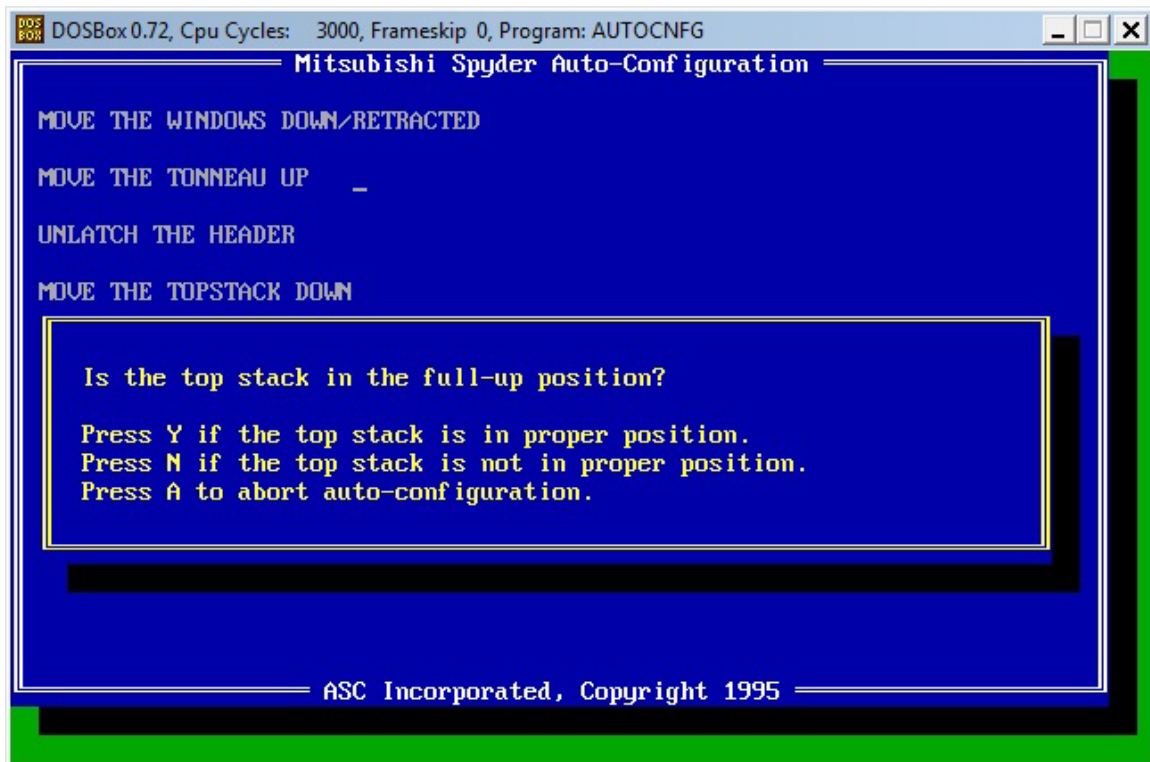
6. When Step 5 is complete and **Y** has been pressed the PC will prompt you to **Press Hardtop OPEN Switch**. The hardtop will move to its fully open position. Hold the switch until a prompt is received to **Release Hardtop OPEN Switch**. When the switch is released the following screen will appear.



NOTE: If the hardtop is not fully open and **N** has been pressed, press and hold the **hardtop OPEN switch** again. If the hardtop is now fully open, press **Y** and continue. If the hardtop is still not fully open press **A** to abort auto-configuration. Diagnose and repair the problem and begin auto-configuration again.

- When Step 6 is complete and **Y** has been pressed the PC will prompt you to **Press Hardtop CLOSE Switch**. The hardtop will move to its fully closed position. When the PC detects that the hardtop is in the fully closed position, it will prompt you to **Release the Hardtop CLOSE Switch**.

When the switch is released the following screen will appear.



NOTE: If the hardtop is not fully closed, and **N** has been pressed, press and hold the **hardtop CLOSE switch** again. Release the hardtop switch when the hardtop reaches its fully closed position. If the hardtop is now fully closed press **Y** and continue. If the hardtop is still not fully closed, press **A** to abort auto-configuration. Diagnose and repair the problem and begin auto-configuration again.

Caution:

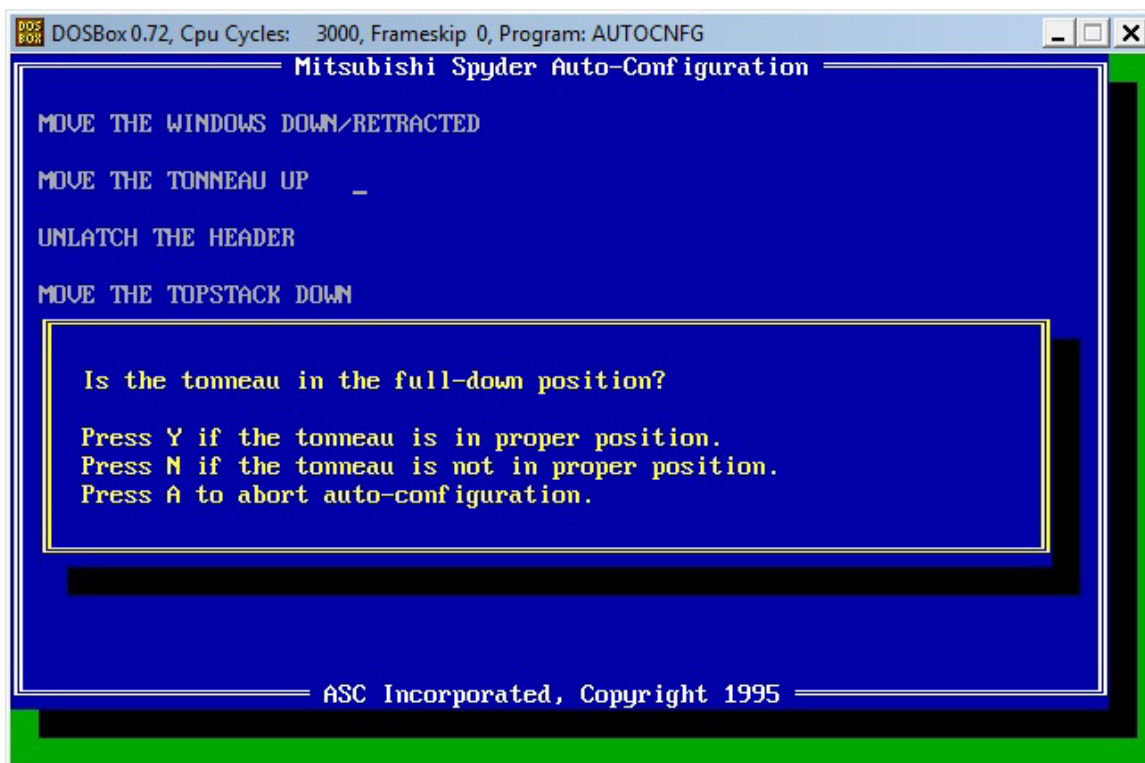
During auto-configuration the safety-stop feature will be ignored when the hardtop is being closed.

When Step 7 is complete and **Y** has been pressed the PC will prompt you to **Press Hardtop CLOSE Switch**. The header latches will latch. The PC will detect that the header latches are latched and will prompt you to **Release Hardtop CLOSE Switch**. No screen will appear.

8. The PC will prompt you to **Press Hardtop CLOSE Switch**. The tonneau will begin to close. When the PC detects that the tonneau is in the fully closed position it will prompt you to **Release Hardtop CLOSE Switch**.

If the PC prompts you to **Release the Hardtop CLOSE Switch** before the tonneau is in its fully closed position, release the switch then press and hold the switch again. Release the **CLOSE** switch when the tonneau reaches its full closed and latched position. When the switch is released the following screen will appear.

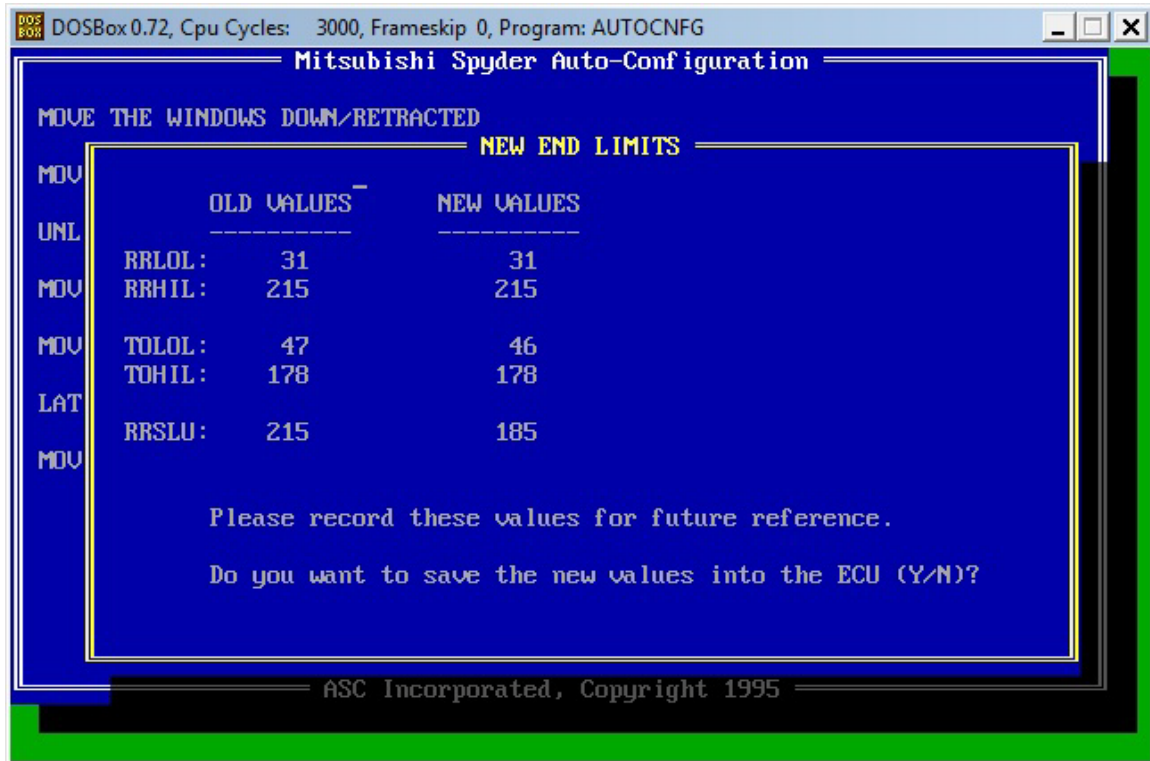
NOTE: If the tonneau is not fully closed, and **N** has been pressed, press and hold the **hardtop CLOSE switch** again. Release the hardtop switch when the tonneau reaches its fully closed position. If the tonneau is now fully closed press **Y** and continue. If the tonneau is still not fully closed, press **A** to abort auto-configuration. Diagnose and repair the problem and begin auto-configuration again.



9. When Step 8 is complete and Y has been pressed the PC will calculate the final values based on the auto-configuration procedure you just performed. You will see a screen similar to the one below which shows the old and new ECU values.

Caution:

The following screen is only an example. Actual results will vary vehicle to vehicle.



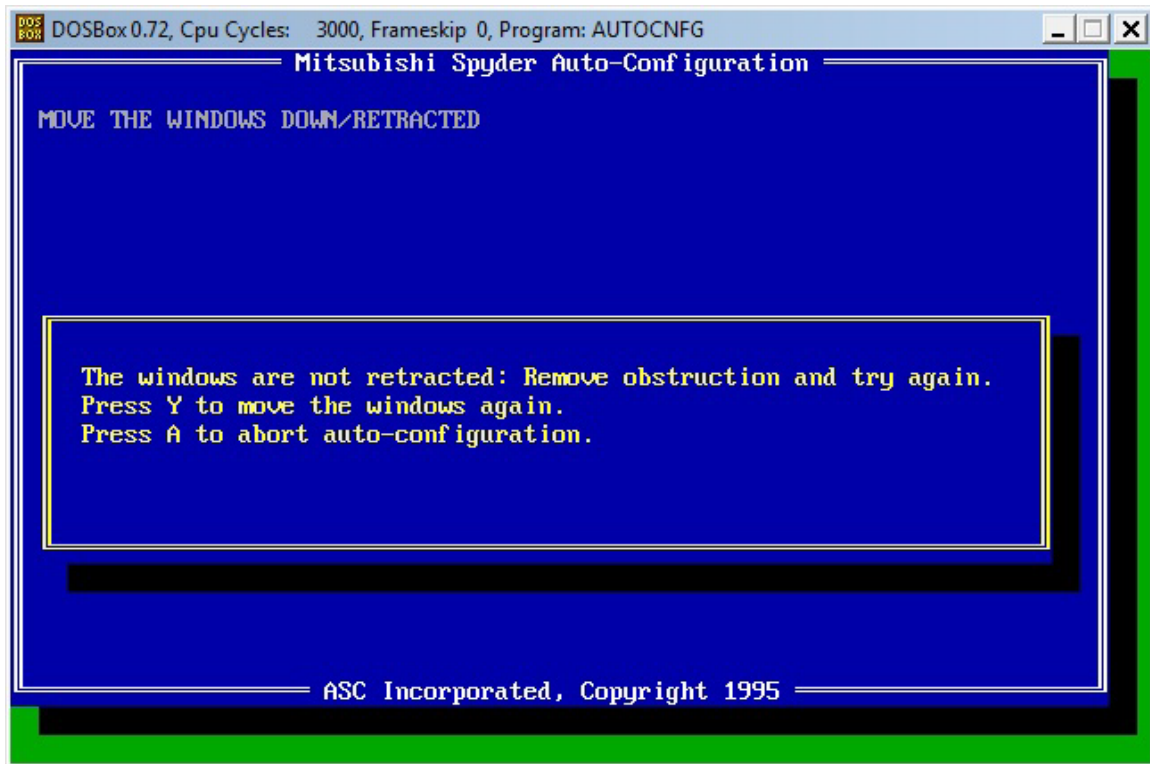
Review the new versus old values. The auto-configuration program has adjusted the parameters to account for service procedures performed and system wear. Any changes to the values in excess of 20 should be questioned and ASC Direct Sales Technical Service Department consulted. If you remove the Safety Stop (Appendix B Part 4) then RRSLU will change by 30 or more.



Errors during Auto-configuration

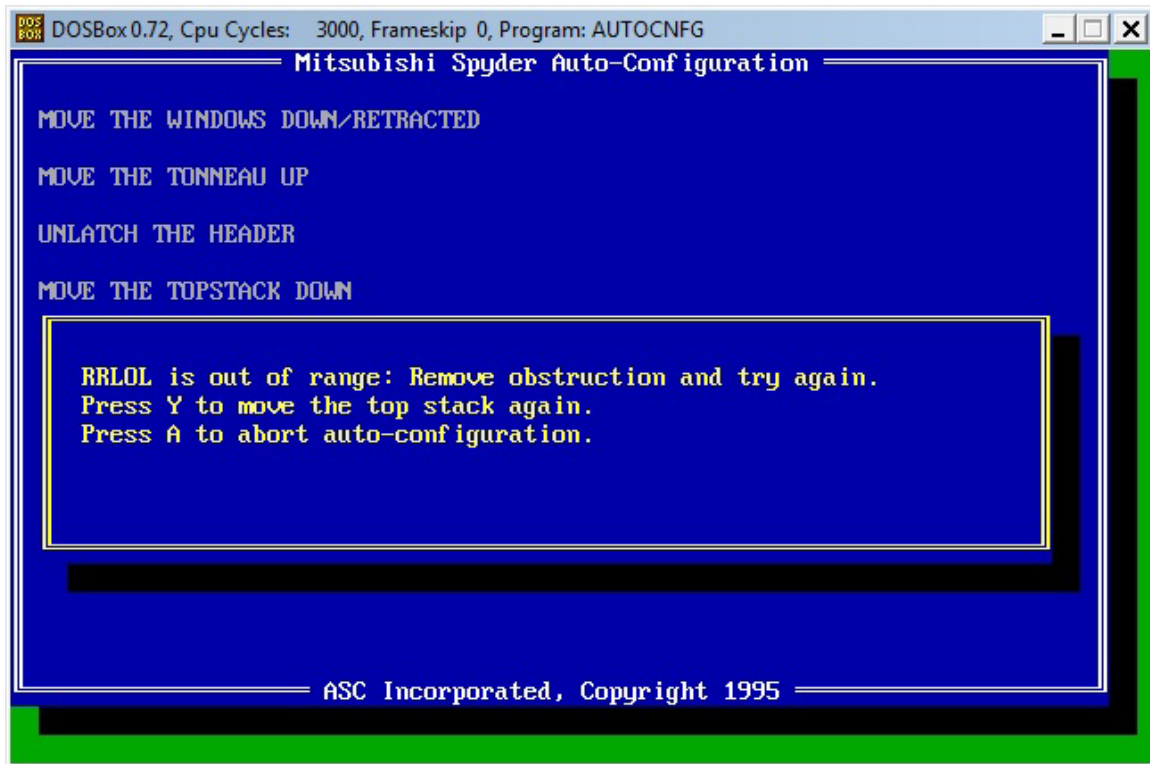
Time-based Error:

If an axis does not reach its end condition before a time-out period elapses the PC will issue an error message. For instance, if the quarter windows run past the time limit, but the PC does not see the quarter window limit switches, you will see the message below. Press **Y** to try to move the axis again. If the second attempt fails, press **A** to abort auto-configuration. Diagnose and repair the problem and begin auto-configuration again.



Position-based Error:

If an axis reaches its end limit but the PC finds that its position is not a valid end limit you will see an error message like the one below. Press **Y** to try to move the axis again.



If you continually encounter problems while auto-configuring an ECU, check again to see if there are any DTCs present. If there are DTC's, diagnose and repair the problem and begin auto-configuration again.

Widening the default range for RRLOL or other parameters MAY eliminate position errors. Original defaults can always be reestablished by reinstalling the JNS-Top_Link-Installer.

If the DTC Log is clear and problems still exist, refer to the SYMPTOM CHART for NO DIAGNOSTIC TROUBLE CODES PRESENT, Diagnostics and Testing in the Service Manual Supplement. For convenience the tables from the Service Manual Supplement have been included in Appendix A.

Appendix A: Diagnostic Trouble Codes

CONDITION	POSSIBLE CAUSE	ACTION
• DTC 00	• No fault.	• Check for possible mechanical or hydraulic concerns. • Go to Symptom Chart-No Diagnostic Trouble Codes present.
• DTC 01	• Reserved	• Reserved.
• DTC 02	• Damaged ECU. • Circuitry open/shorted. • Damaged limit switch.	• Go to Pinpoint Test DTC 02-06.
• DTC 03	• Damaged ECU. • Circuitry open/shorted. • Damaged limit switch.	• Go to Pinpoint Test DTC 02-06.
• DTC 04	• Damaged ECU. • Circuitry open/shorted. • Damaged limit switch.	• Go to Pinpoint Test DTC 02-06.
• DTC 05	• Damaged ECU. • Circuitry open/shorted. • Damaged limit switch.	• Go to Pinpoint Test DTC 02-06.
• DTC 06	• Damaged ECU. • Circuitry open/shorted. • Damaged limit switch.	• Go to Pinpoint Test DTC 02-06.
• DTC 07	• Blown fuse. • Circuitry open/shorted. • Damaged ECU.	• Go to Pinpoint Test DTC 07.
• DTC 08	• Damaged battery. • Charging system malfunction. • Damaged ECU.	• Go to Pinpoint Test DTC 08.
• DTC 09	• Damaged hardtop potentiometer. • Circuitry open/shorted. • Damaged ECU.	• Go to Pinpoint Test DTC 09-11.
• DTC 10	• Damaged hardtop potentiometer. • Circuitry open/shorted. • Damaged ECU.	• Go to Pinpoint Test DTC 09-11.
• DTC 11	• Damaged hardtop potentiometer. • Circuitry open/shorted. • Damaged ECU.	• Go to Pinpoint Test DTC 09-11.
• DTC 12	• Damaged hard tonneau potentiometer. • Circuitry open/shorted. • Damaged ECU.	• Go to Pinpoint Test DTC 12-14.
• DTC 13	• Damaged hard tonneau potentiometer. • Circuitry open/shorted. • Damaged ECU.	• Go to Pinpoint Test DTC 12-14.

Table 1 – DTC Codes 00 through 13

CONDITION	POSSIBLE CAUSE	ACTION
• DTC 14	<ul style="list-style-type: none"> • Damaged hard tonneau potentiometer. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 12-14.
• DTC 15	<ul style="list-style-type: none"> • Damaged hardtop and/or hard tonneau potentiometer. 	• Go to Pinpoint Test DTC 15.
• DTC 16	<ul style="list-style-type: none"> • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 16.
• DTC 17	<ul style="list-style-type: none"> • Damaged hardtop and/or hard tonneau potentiometer. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 17.
• DTC 18	<ul style="list-style-type: none"> • Damaged header latch limit switch. • Circuitry open/shorted. • Damaged header latch motor. • Damaged ECU. • Damaged and/or binding linkage. 	• Go to Pinpoint Test DTC 18.
• DTC 19	<ul style="list-style-type: none"> • Damaged header latch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 19.
• DTC 20	<ul style="list-style-type: none"> • Damaged header latch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 20.
• DTC 21	<ul style="list-style-type: none"> • Damaged header latch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 21.
• DTC 22	<ul style="list-style-type: none"> • Damaged header unlatch limit switch. • Circuitry open/shorted. • Damaged header latch motor. • Damaged ECU. • Damaged and/or binding linkage. 	• Go to Pinpoint Test DTC 22.
• DTC 23	<ul style="list-style-type: none"> • Damaged header unlatch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 23.
• DTC 24	<ul style="list-style-type: none"> • Damaged header unlatch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 24.
• DTC 25	<ul style="list-style-type: none"> • Damaged header unlatch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 25.

Table 2 – DTC Codes 14 through 25

CONDITION	POSSIBLE CAUSE	ACTION
• DTC 26	<ul style="list-style-type: none"> • Damaged LH retractable quarter window extend limit switch. • Circuitry open/shorted. • Damaged retractable quarter window motor. • Damaged ECU. • Damaged and/or binding linkage. 	• Go to Pinpoint Test DTC 26.
• DTC 27	<ul style="list-style-type: none"> • Damaged LH retractable quarter window extend limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 27.
• DTC 28	<ul style="list-style-type: none"> • Damaged LH retractable quarter window extend limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 28.
• DTC 29	<ul style="list-style-type: none"> • Damaged LH retractable quarter window extend limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 29.
• DTC 30	<ul style="list-style-type: none"> • Damaged RH retractable quarter window retract limit switch. • Circuitry open/shorted. • Damaged retractable quarter window motor. • Damaged ECU. • Damaged and/or binding linkage. 	• Go to Pinpoint Test DTC 30.
• DTC 31	<ul style="list-style-type: none"> • Damaged RH retractable quarter window retract limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 31.
• DTC 32	<ul style="list-style-type: none"> • Damaged RH retractable quarter window retract limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 32.
• DTC 33	<ul style="list-style-type: none"> • Damaged RH retractable quarter window retract limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 33.
• DTC 34	<ul style="list-style-type: none"> • Damaged LH header position limit switch. • Circuitry open/shorted. • Damaged header latch motor. • Damaged ECU. 	• Go to Pinpoint Test DTC 34.
• DTC 35	<ul style="list-style-type: none"> • Damaged LH header position limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 35.
• DTC 36	<ul style="list-style-type: none"> • Damaged LH header position limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 36.

Table 3 – DTC Codes 26 through 36

CONDITION	POSSIBLE CAUSE	ACTION
• DTC 37	<ul style="list-style-type: none"> • Damaged LH header position limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 37.
• DTC 38	<ul style="list-style-type: none"> • Damaged RH header position limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 38.
• DTC 39	<ul style="list-style-type: none"> • Damaged RH header position limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 39.
• DTC 40	<ul style="list-style-type: none"> • Damaged RH header position limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 40.
• DTC 41	<ul style="list-style-type: none"> • Damaged RH header position limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 41.
• DTC 42	<ul style="list-style-type: none"> • Damaged LH tonneau latch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 42.
• DTC 43	<ul style="list-style-type: none"> • Damaged LH tonneau latch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 43.
• DTC 44	<ul style="list-style-type: none"> • Damaged LH tonneau latch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 44.
• DTC 45	<ul style="list-style-type: none"> • Damaged LH tonneau latch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 45.
• DTC 46	<ul style="list-style-type: none"> • Damaged RH tonneau latch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 46.
• DTC 47	<ul style="list-style-type: none"> • Damaged RH tonneau latch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 47.
• DTC 48	<ul style="list-style-type: none"> • Damaged RH tonneau latch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 48.

Table 4 – DTC Codes 37 through 48

CONDITION	POSSIBLE CAUSE	ACTION
• DTC 49	<ul style="list-style-type: none"> • Damaged RH tonneau latch limit switch. • Circuitry open/shorted. • Damaged ECU. 	• Go to Pinpoint Test DTC 49.
• DTC 50	<ul style="list-style-type: none"> • Circuitry shorted. • Damaged hardtop pump/motor. • Damaged ECU. • Damaged and/or binding linkage. 	• Go to Pinpoint Test DTC 50.
• DTC 51	<ul style="list-style-type: none"> • Circuitry shorted. • Damaged hard tonneau pump/motor. • Damaged ECU. • Damaged and/or binding linkage. 	• Go to Pinpoint Test DTC 51.
• DTC 52	<ul style="list-style-type: none"> • Circuitry open/shorted. • Damaged driver window relay assembly. • Damaged driver window motor. • Damaged ECU. • Damaged and/or binding linkage. 	• Go to Pinpoint Test DTC 52.
• DTC 53	<ul style="list-style-type: none"> • Circuitry open/shorted. • Damaged passenger window motor. • Damaged ECU. • Damaged and/or binding linkage. 	• Go to Pinpoint Test DTC 53.
• DTC 54	<ul style="list-style-type: none"> • Circuitry open/shorted. • Damaged hard tonneau pump/motor. • Damaged ECU. • Damaged and/or binding linkage or latches. • Operating off poor battery or poor power supply. • Obstruction of hard tonneau (other than linkage). 	<ul style="list-style-type: none"> • Refer to Pinpoint Test for any other DTC that occurred. • Go to Pinpoint Test D, E, and F.
• DTC 55	<ul style="list-style-type: none"> • Circuitry open/shorted. • Damaged hardtop pump/motor. • Damaged ECU. • Damaged and/or binding linkage or latches. • Operating off poor battery or poor power supply. • Obstruction of hard tonneau (other than linkage). 	<ul style="list-style-type: none"> • Refer to Pinpoint Test for any other DTC that occurred. • Go to Pinpoint Test G, and H.
• DTC 56	<ul style="list-style-type: none"> • Circuitry open/shorted. • Damaged object-in-trunk sensor. • Damaged ECU. • Object-in-trunk sensor disconnected. 	• Go to Pinpoint Test DTC 56.
• DTC 57	<ul style="list-style-type: none"> • Damaged and/or binding LH tonneau latches or cables. • Damaged LH tonneau latch release motor. • Circuitry open. 	<ul style="list-style-type: none"> • Check and service mechanical concerns. • Go to Pinpoint Test F.
• DTC 58	<ul style="list-style-type: none"> • Damaged and/or binding RH tonneau latches or cables. • Damaged RH tonneau latch release motor. • Circuitry open. 	<ul style="list-style-type: none"> • Check and service mechanical concerns. • Go to Pinpoint Test F.

Table 5 – DTC Codes 49 through 58

CONDITION	POSSIBLE CAUSE	ACTION
• DTC 59	<ul style="list-style-type: none"> • Damaged and/or binding hardtop linkage. • Damaged header latch strikers. • Damaged header latch position switches. • Circuitry open/shorted. • Damaged ECU. 	<ul style="list-style-type: none"> • Check and service mechanical concerns. • Go to Pinpoint Test DTC 44 and DTC 48.
• DTC 60	<ul style="list-style-type: none"> • Damaged and/or binding hard tonneau linkage. • Damaged tonneau latch strikers. • Damaged tonneau latch position switches. • Circuitry open/shorted. • Damaged ECU. 	<ul style="list-style-type: none"> • Check and service mechanical concerns. • Go to Pinpoint Test DTC 42 and DTC 46.
• DTC 61	<ul style="list-style-type: none"> • Damaged and/or binding hardtop linkage. • Obstruction in path of normal travel. 	<ul style="list-style-type: none"> • Check and service mechanical concerns. • Remove obstruction. • Refer to other DTCs that may have occurred.
• DTC 62	<ul style="list-style-type: none"> • Damaged and/or binding hard tonneau linkage. • Obstruction in path of normal travel. 	<ul style="list-style-type: none"> • Check and service mechanical concerns. • Remove obstruction. • Refer to other DTCs that may have occurred.

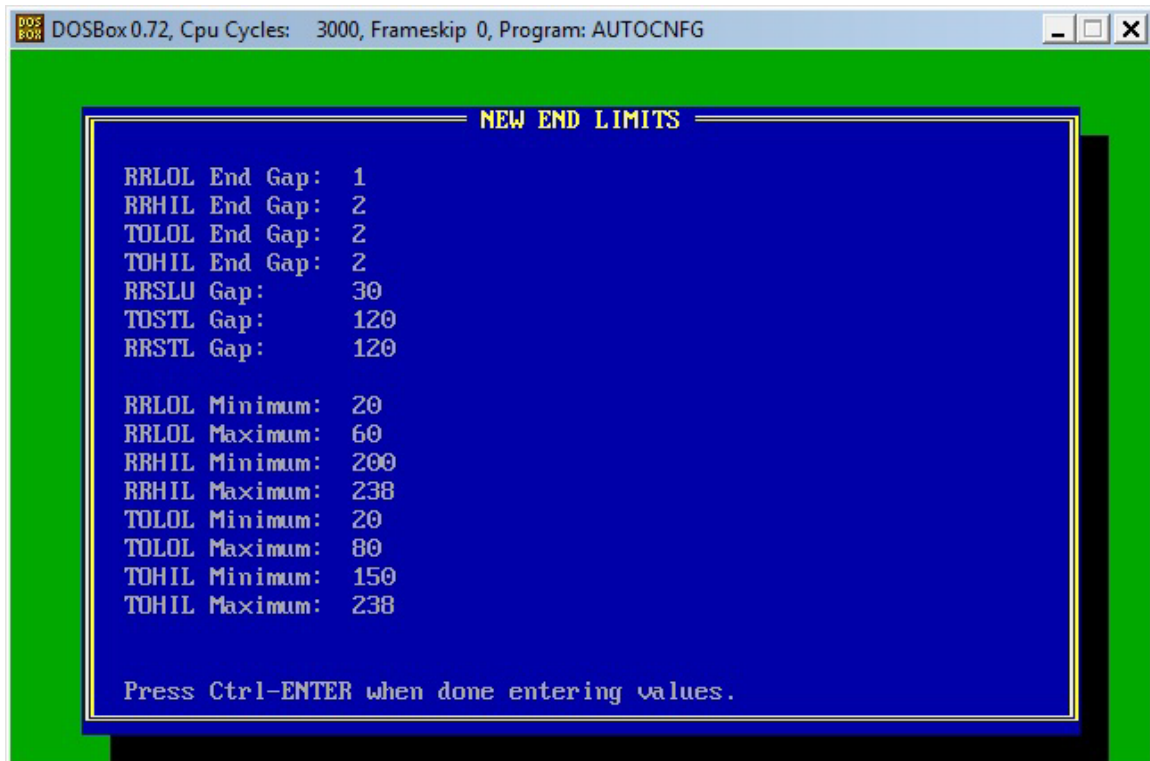
Table 6 – DTC Codes 59 through 62

Appendix B: Change Default Parameters

The auto-configuration program has an entry screen to change the main operating default parameters in the PC.

1. Changing Default Parameters in the PC

Press the up (↑) or down (↓) arrow to highlight “**Change Default Parameters**” on the **Main Menu**. Press {ENTER} to make this selection. The password for accessing the defaults is **3000GT**.



Screen legends

RRLOL (Rear Rail* Low Limit) End Gap

The amount added to the measured hardtop low limit to get the final hardtop low limit.

RRHIL (Rear Rail* High Limit) End Gap

The amount added to the measured hardtop high limit to get the final hardtop high limit.

TOLOL (Tonneau Low Limit) End Gap

The amount subtracted from measured tonneau low limit to get the final tonneau low limit.

TOHIL (Tonneau High Limit) End Gap

The amount subtracted from the measured tonneau high limit to get the final tonneau high limit.

RRSLU (Rear Rail* Safety Stop Limit) Gap

The amount subtracted from the hardtop high limit to get the safety stop limit.

RRSGAP (Rear Rail* Stall Gap)

The amount subtracted from the hardtop stall limit to detect stall in the hardtop open and closed position.

TOSGAP (Tonneau Stall Gap)

The amount subtracted from the tonneau stall limit to detect stall in the tonneau open and closed position.

RRLOL (Rear Rail* Low Limit) Minimum/Maximum

The boundaries for a valid hardtop high limit.

RRHIL (Rear Rail* High Limit) Minimum/Maximum

The boundaries for a valid hardtop low limit.

TOLOL (Tonneau Low Limit) Minimum/Maximum

The boundaries for a valid tonneau low limit.

TOHIL (Tonneau High Limit) Minimum/Maximum

The boundaries for a valid tonneau high limit.

*Rear Rail refers to the portion of the Spyder hardtop into which the quarter windows retract.

Use the up (↑) or down (↓) arrow keys to select the parameter that you want to change. Enter a new number and press **{ENTER}**. Press **{Control}-{ENTER}** to save the new values and return to the **Main Menu**.

2. Changing default parameters in the hardtop ECU.

(1) Viewing and modifying the ECU parameters.

Key ECU parameters are stored in tables in the PC computer software, with addresses matching the software in the ECU. These parameters can be directly accessed using labels which start with the symbol #.

The version of the PC software must match the version number of the ECU software. This includes the *MITSXXX.MAP* file on the PC.

To display a parameter:

To view the current value of an ECU parameter, type # followed by the parameter name. For example, type **#RRHIL {ENTER}** to access the hardtop high limit.

To change a parameter:

1. First the write protect for the section of **RAM** where the parameter you wish to modify resides must be disabled. Refer to the parameter list in Table 1 for the corresponding section of each parameter. For example, the parameter **#RRHIL** resides in **#EESEC2**. So type **#EESEC2 {ENTER}**.
2. Now type **5AH**. The write protection for **#EESEC2** is now disabled and parameters within this section can be updated.
3. Type # followed by the parameter name. For example, type **#RRHIL {ENTER}**.
4. To change this parameter to a new value, simply type the new value, followed by **W**. For example, to change **#RRHIL** old value 211 to new value 213 type **213W**. The screen should now show a value of 213 in **RRHIL**.

To save updated parameters in EEPROM:

1. First program all the parameters in a particular section that you wish to change using the procedures described above.
2. Type # followed by the section name where the parameters you wish to save are located. For example type **#EESEC2 {ENTER}** to update the parameters in **EESEC2**.
3. Change the value at this location by typing **55H**. The modified parameters will now be automatically stored in the on-board EEPROM.

NAME	DESCRIPTION	EE SECTION
#DQSTL	RETRACTABLE STALL CURRENT	#EESEC2
#DQTIL	RETRACTABLE TIME LIMIT	#EESEC2
#DTCLOG	DIAGNOSTIC TROUBLE CODE LOG	#EESEC5
#DWSTL	DRIVER WINDOW STALL CURRENT	#EESEC2
#DWTIL	DRIVER WINDOW TIME LIMIT	#EESEC2
#ENDSTL	END STALL CURRENT TIME	#EESEC2
#MFGDAT	MANUFACTURE DATA	#EESEC4
#PWSTL	PSNGR WINDOW STALL CURRENT	#EESEC2
#PWTIL	PSNGR WINDOW TIME LIMIT	#EESEC2
#RRDVDT	HARD TOP DVDT LIMIT	#EESEC2
#RRHIL	HARD TOP HIGH LEVEL	#EESEC2
#RRLOL	HARD TOP LOW LEVEL	#EESEC2
#RROHL	HARD TOP OVERLAP HIGH LEVEL	#EESEC2
#RROLL	HARD TOP OVERLAP LOW LEVEL	#EESEC2
#RRSLU	HARD TOP SAFETY STOP UP LIMIT	#EESEC2
#RRSTL	HARD TOP STALL CURRENT	#EESEC2
#RRTIL	HARD TOP TIME LIMIT	#EESEC2
#STSTL	START-UP STALL DELAY	#EESEC2
#TODVDT	TONNEAU DVDT LIMIT	#EESEC2
#TOHIL	TONNEAU HIGH LEVEL	#EESEC2
#TOLOL	TONNEAU LOW LEVEL	#EESEC2
#TOOHL	TONNEAU OVERLAP HIGH LEVEL	#EESEC2
#TOOLL	TONNEAU OVERLAP LOW LEVEL	#EESEC2
#TOSTL	TONNEAU STALL CURRENT	#EESEC2
#TOTIL	TONNEAU TIME LIMIT	#EESEC2

Table 7 - Hardtop ECU Default Parameters

3. Restoring the Original Program Defaults.

The original program defaults can be reestablished by simply reinstalling the software package provided by JNS Engineering. See Appendix C.

4. Removing the Safety Stop

Removal of the safety stop requires changing of the default parameters either in the PC or in the ECU EEPROM Table. Only one of the following procedures is required for safety stop removal. USE THE FOLLOWING AT YOUR OWN RISK.

- (1) Safety stop removal via PC default changes. Enter the **Change Default Parameters** menu with the password given in Appendix B part 1, change the value of the **RRSLU** gap to 0 and save it into the PC. Then run the **Begin Auto Configuration** routine and Save the parameters into the ECU on completion. The **RRSLU** value should match **RRHIL** which is the maximum position of the Top. Note the original PC setting for **RRSLU** is 30 which means the Safety Stop is normally 30 lower than the **RRHIL** value. In other words, after Auto Configuration, the final value for **RRSLU** is equal to **RRHIL** – (**RRSLU** gap). Note that this procedure changes the program default in the PC and every car which is subsequently auto-configured will also have its safety stop removed.
- (2) Safety Stop removal via manual programming. Enter the **Run Diagnostic Program** menu and enter **#EESEC2 {ENTER}** followed by **5AH {ENTER}**. Then **RRSLU {ENTER}** followed by **xxxW {ENTER}**, where xxx is the Top max value (~215). Then **#EESEC2 {ENTER}** followed by **55H {ENTER}**. Note that if Auto Configuration is performed after doing this (and the auto-config values are written to the ECU), the original safety stop will be restored unless the **RRSLU** was changed as in step (1) above.

5. Restoring the Safety Stop

The safety stop can be restored either by restoring the PC defaults and running the Auto Configuration routine, or by manual programming:

- (1) Restoring by Auto Configuration. Enter the **Change Default Parameters** menu with the password given in Appendix B part 1, change the value of the **RRSLU** gap to 30 and save it into the PC. Then run the **Begin Auto Configuration** routine and Save the parameters into the ECU on completion. The final value for **RRSLU** is equal to **RRHIL** – (**RRSLU** gap).
- (2) Restoring via manual programming. Enter the **Run Diagnostic Program** menu and enter **#EESEC2 {ENTER}** followed by **5AH {ENTER}**. Then **RRSLU {ENTER}** followed by **xxxW {ENTER}**, where xxx is the Top max value (~215) - 30. Then **#EESEC2 {ENTER}** followed by **55H {ENTER}**.

Appendix C: Software Installation

Compatible computer equipment

The software provided by ASC Incorporated was originally intended for an IBM® AT or compatible and runs under MS-DOS® version 5.0 or later. Modern computers running Windows can be configured to run MS-DOS® programs using an emulator called DosBOX. DosBOX provides a protected environment and access to resources including communications ports, CD ROM drives, sound cards, and many others exactly as they would be accessed using MS-DOS.

PC System Requirements:

Microsoft Windows **7** (32 or 64 bit), **Vista** (32 or 64 bit), **XP** (32 or 64 bit)

600 MHz or faster x86 or x64 CPU

128 MB memory

640x480 hi-color or 24-bit display

20 MB hard drive space

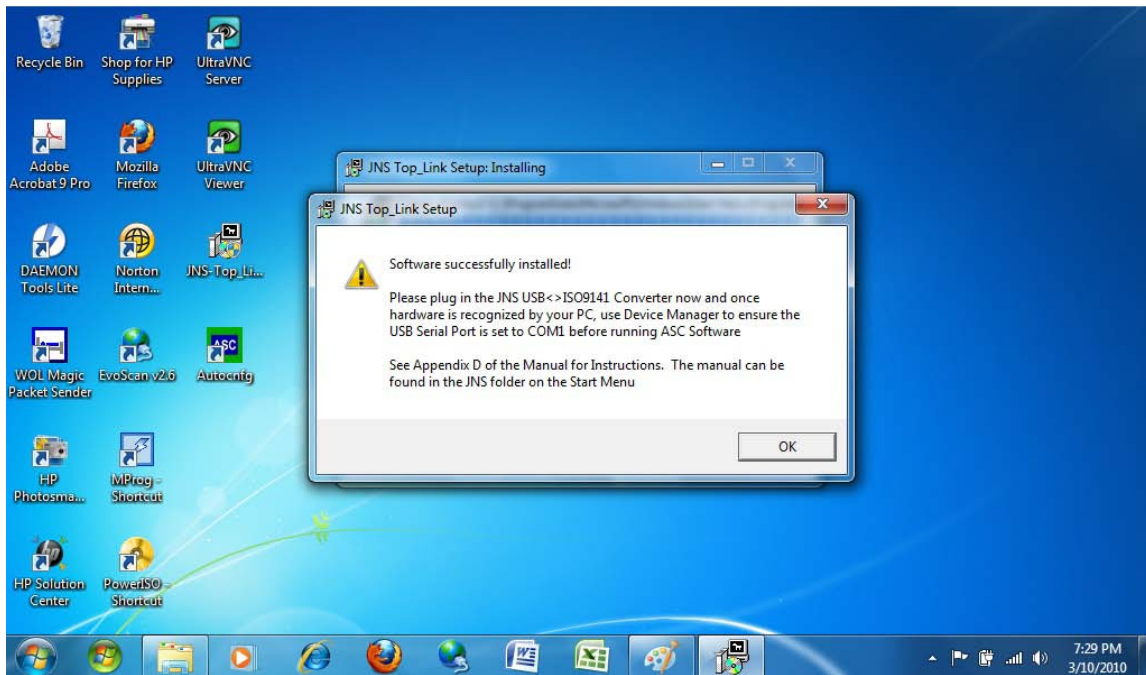
The Software Installation package provided by JNS Engineering preloads the original ASC software along with DosBOX and USB to serial port (RS-232) drivers needed for communications. The installer creates an Autocnfg Icon on the desktop as well as a JNS program group on the start menu. Also placed within the program group is an Uninstall package as well as this manual. The installer requires **Administrator** privileges to run properly.

How to install Auto-configuration software

Download the [Installation Package](#) from the JNS Engineering web site. Double Click the EXE file and the files and drivers will be automatically installed. An uninstallation program is added to the JNS program group as well. Uninstallation will remove all the files and drivers as well.

YOU MUST INSTALL THE SOFTWARE BEFORE PLUGGING IN THE USB<>ISO9141 CONVERTER

Screen shot of a successful installation:



Appendix D: Hardware Installation

If you ordered the Top_Link or Top_Link with Evoscan you should have received a module like the one shown in Figure 2. You should also have received a USB A/B cable similar to the one in Figure 3. After having installed the software per Appendix C, plug in your Top_Link module to your laptop using the supplied USB A/B cable and be sure to follow the instructions on setting up the COM port properly so that the ASC software will run. You should also have received either Top_Link Cable “A” or “B” to complete the connection from the Top_Link Converter to the Spyder DLC connector. Please see further information for making this connection in Appendix E. Please see Appendix F for more information on Evoscan support.

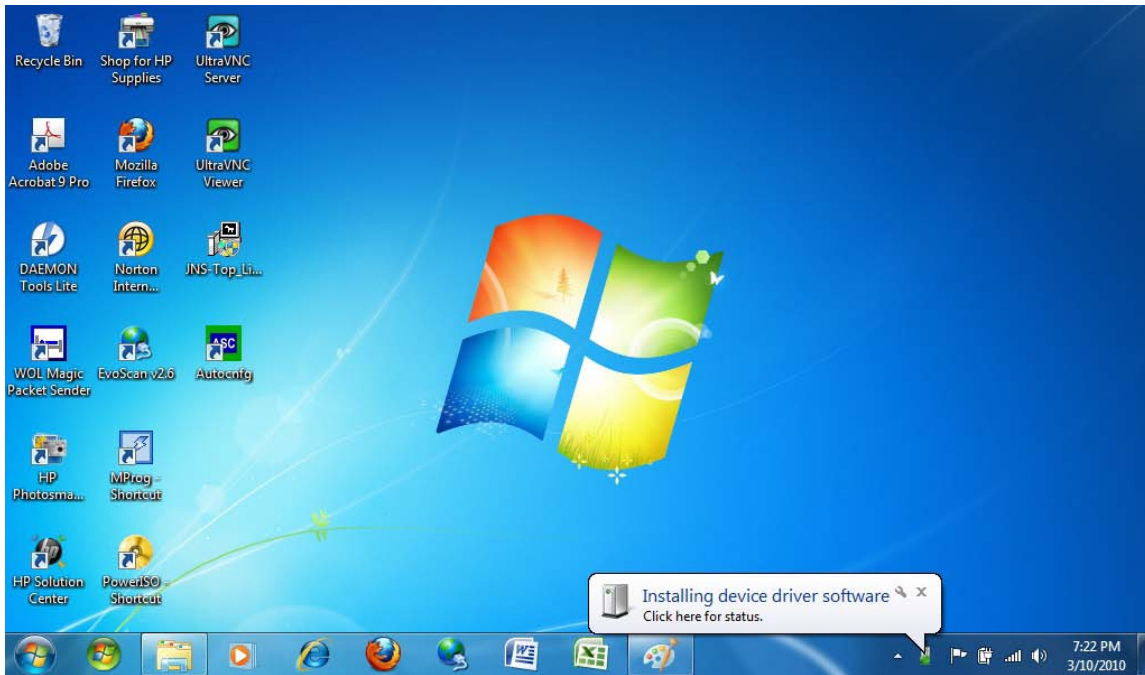


Figure 2 - Top_Link Converter Module

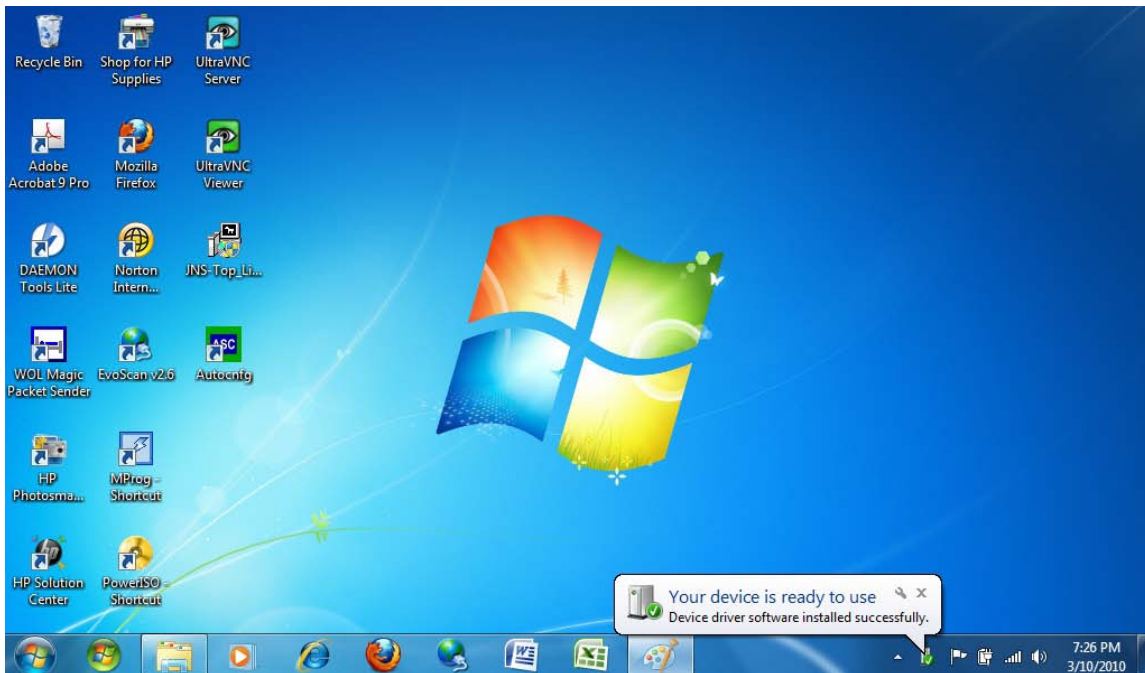


Figure 3 - USB A/B Cable

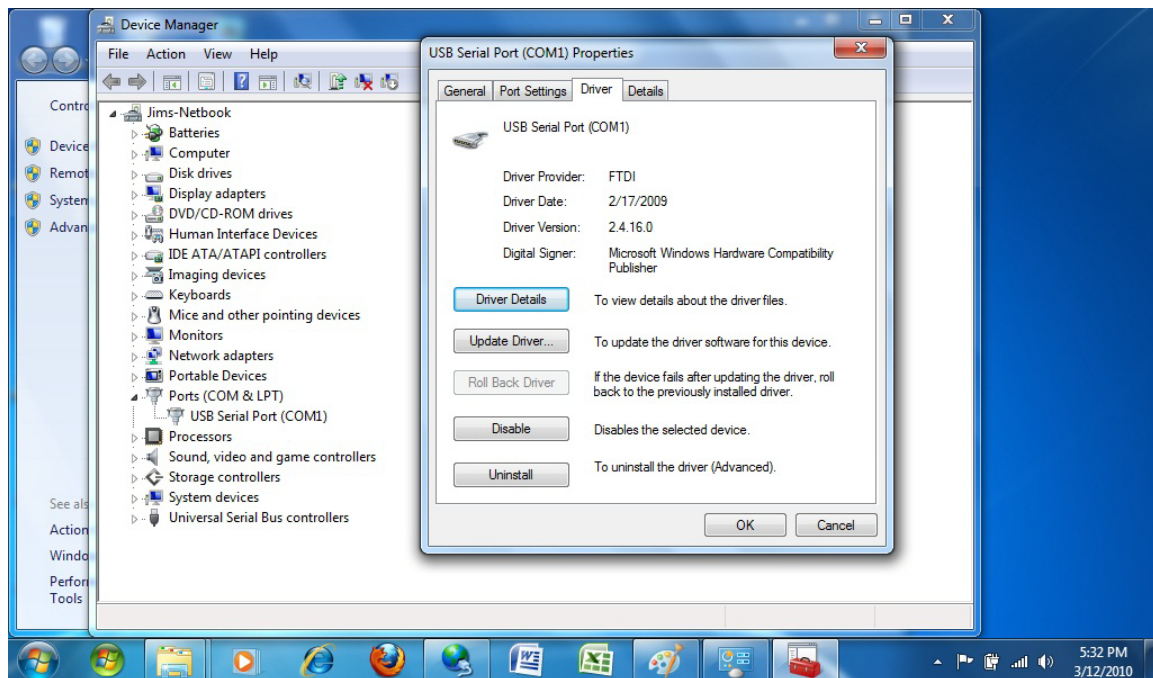
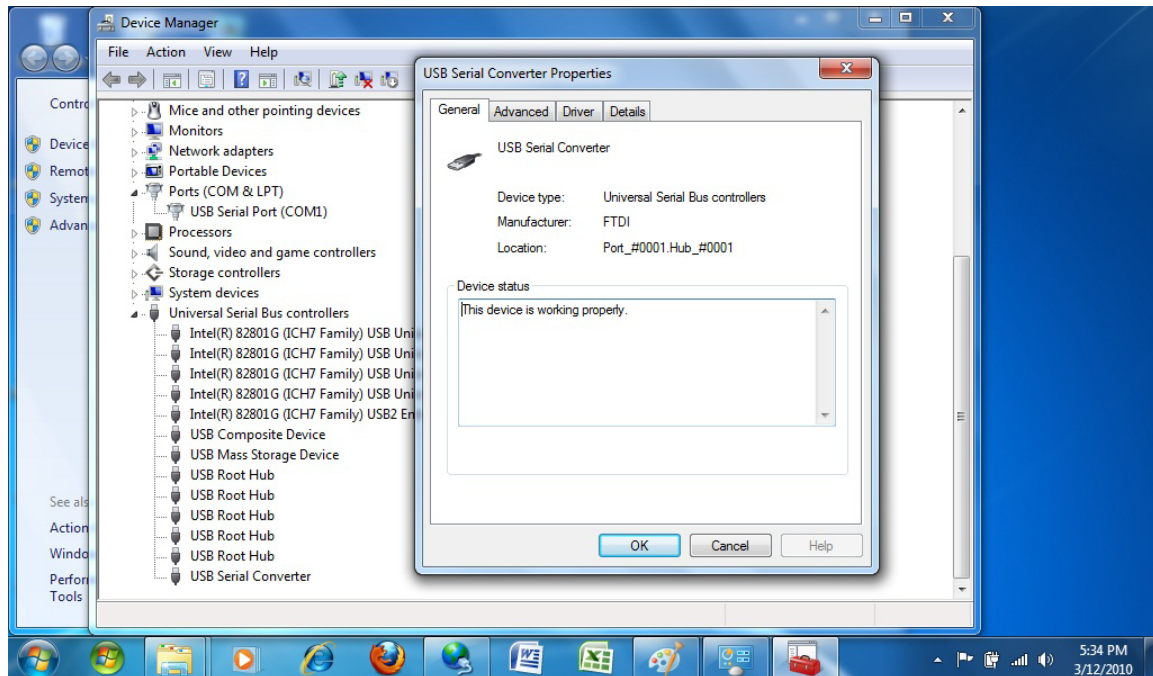
After plugging in the USB<->ISO9141 converter, the USB Device is discovered by the Found New Hardware Wizard:



As the drivers are installed you will hear a chime for each driver followed by the device ready message:

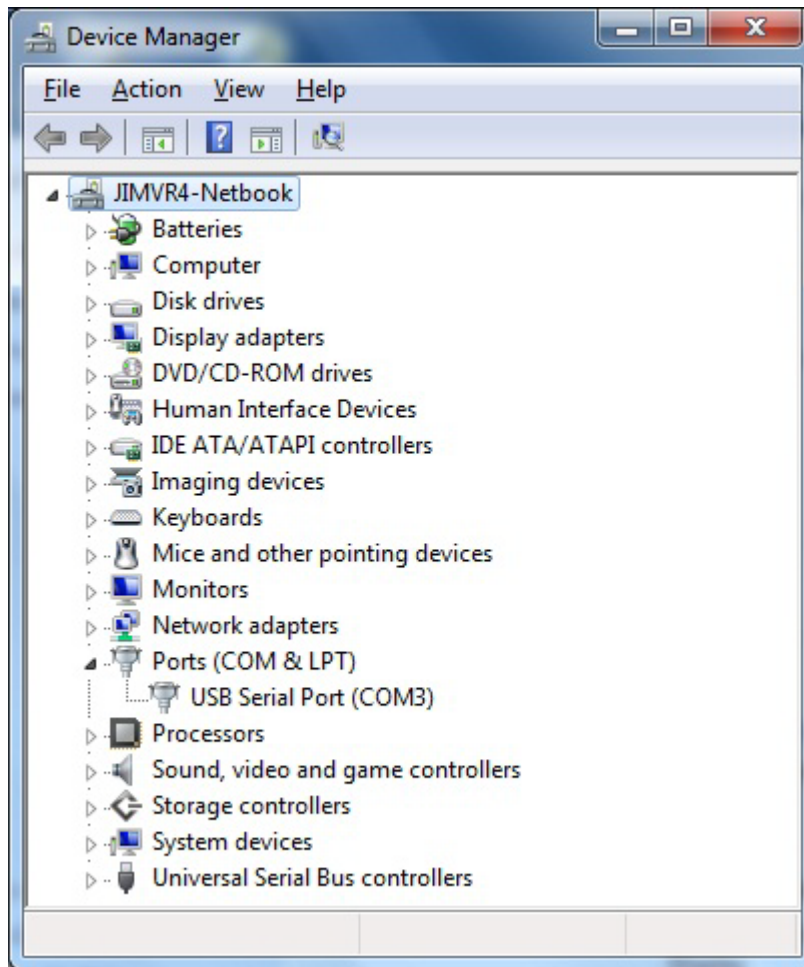


Note that two devices are installed in Device Manager, the Serial Converter which is under USB controllers, and the Serial Port which is in Ports (Com & LPT). The devices only appear in Device Manager when plugged into a USB port.

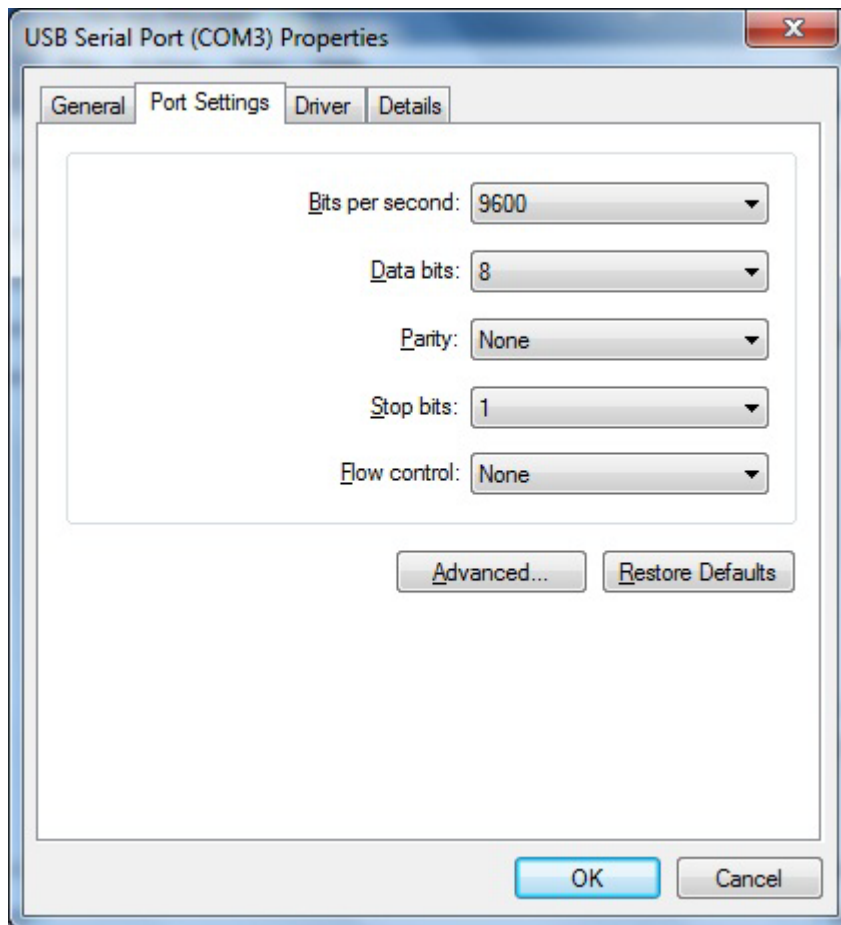


The serial port enumeration may cause the serial port to be assigned to an unwanted COM port number. The ASC program requires that COM1 is used for serial communications. If the PC or laptop has COM1 in use then you may need to disable it through your PC BIOS settings program.

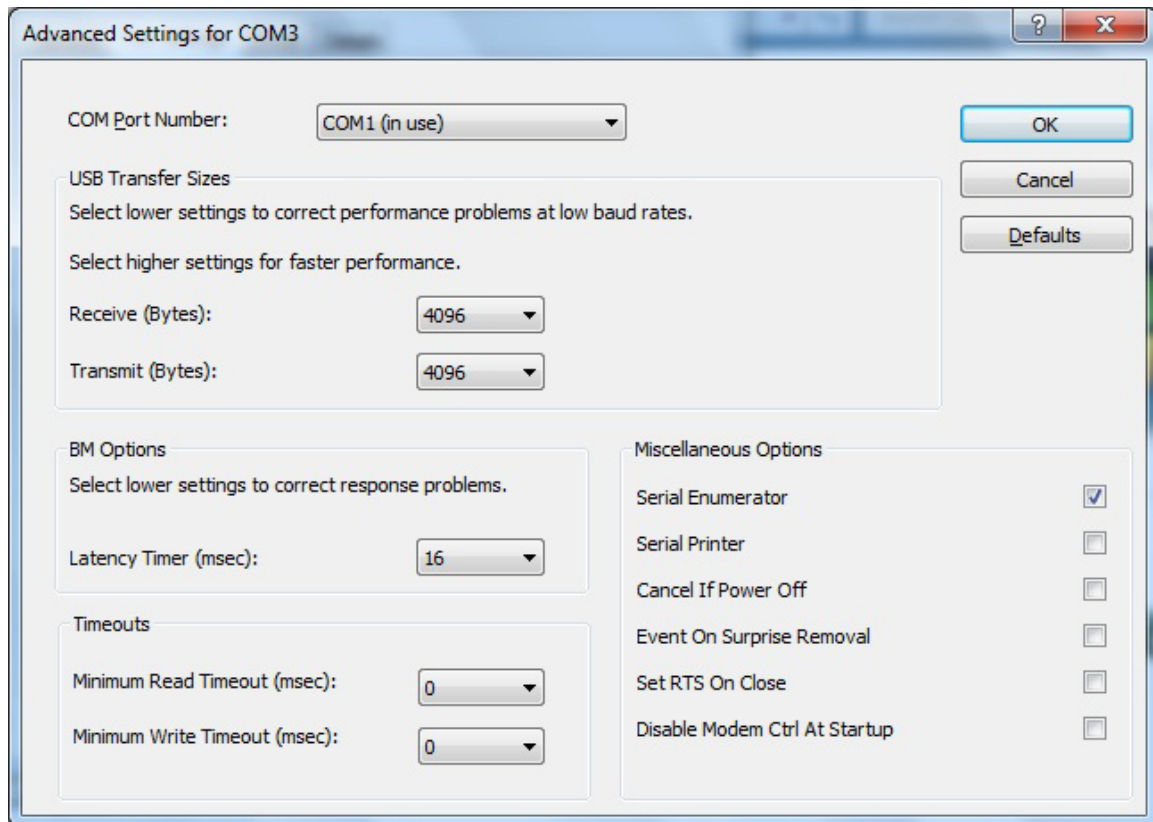
After confirming this, go into the Device Manager and check the Ports section. To reach Device Manager, Right click the My Computer icon and select Properties, then Hardware, then Device Manager. Scroll down to Ports to see which COM port was assigned. In my case COM3 was assigned to the USB Serial Port as shown below:



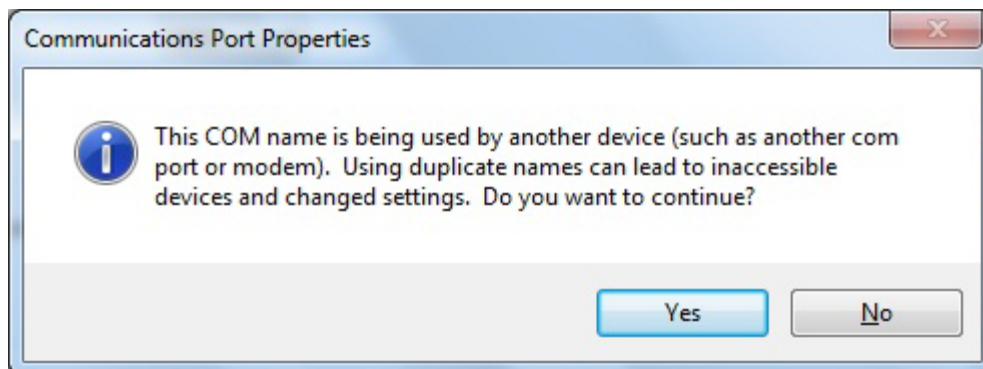
Right Click on the entry and click Properties and then Port Settings for the USB Serial Port:



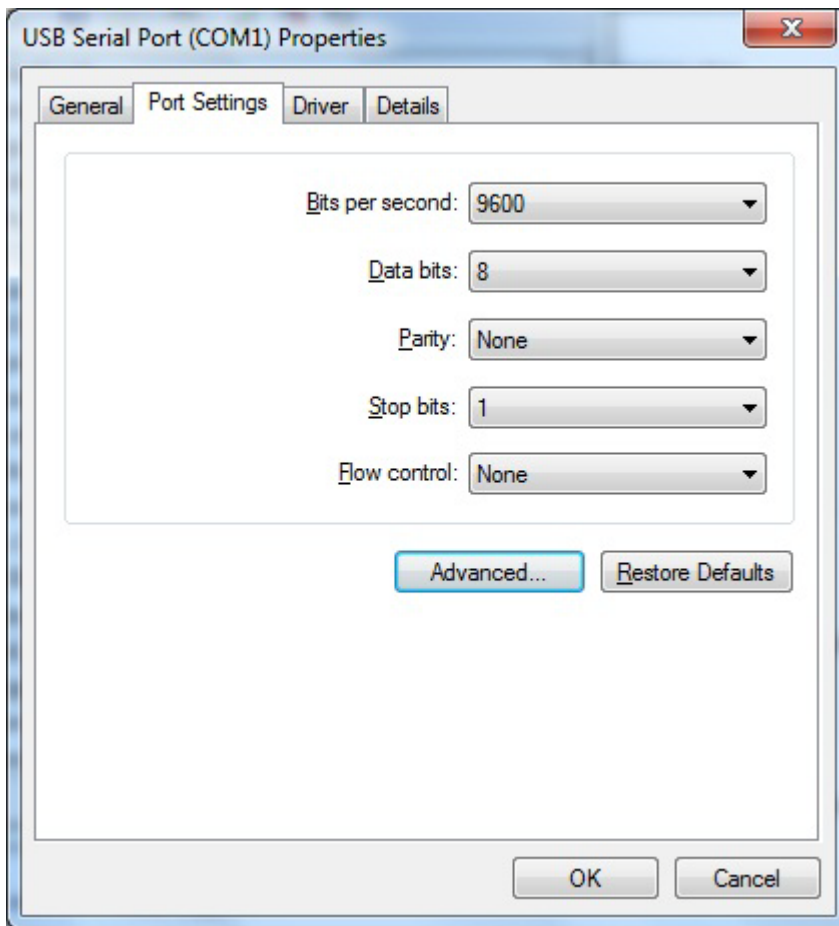
Now click the Advanced button and you should see this screen:



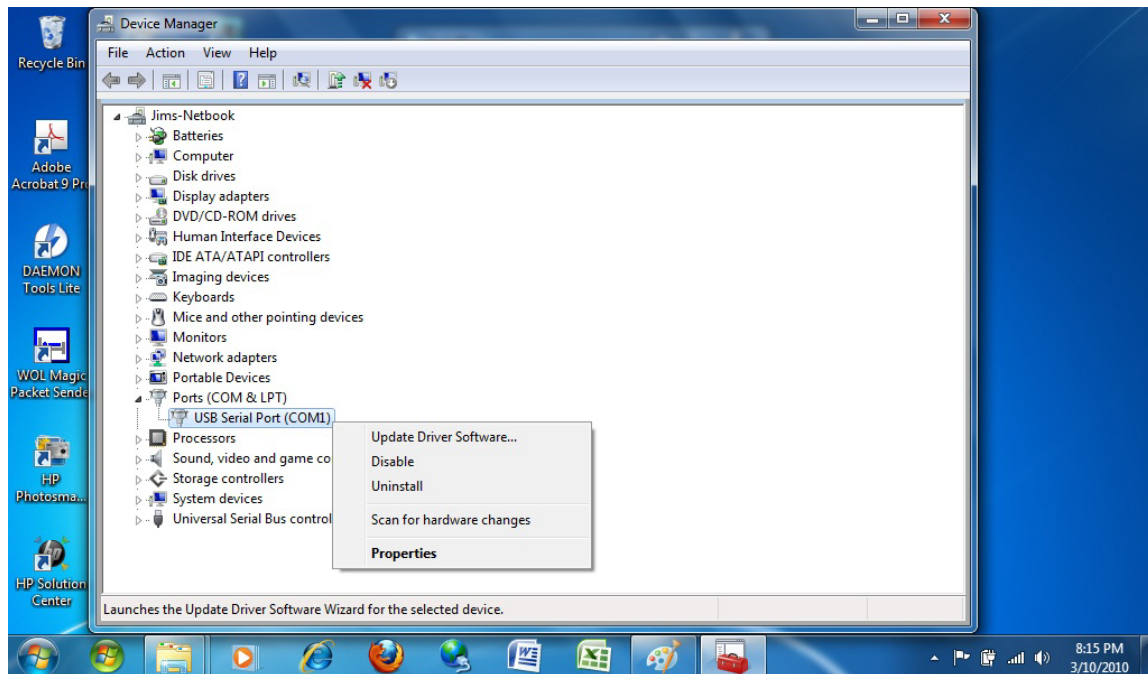
Using the pull down menu, assign the COM Port Number to COM1 and click OK. Click Yes if you get a dialog box that the port is being used:



The Serial Port Properties dialog box returns, this time with the new assignment:



Right Click the USB Serial Port in Device Manager and click Scan for HW changes to confirm the serial port is now assigned to COM1:



This completes the HW / SW installation of the JNS Eng USB<>ISO9141 converter.

Appendix E: Connecting to the Spyder ECU connector

The cables that connect the USB<>ISO9141 converter to the vehicle use a standard DB9 Female connector and should NEVER be plugged into a computer serial port or any device other than the USB<>ISO9141 converter.

Unfortunately the connector on the vehicle side of the cable can be either a male or female Yazaki connector depending on when the Spyder was produced. For clarity we will define Cable A for the male Yazaki connector that interfaces with the early 1995 Spydres, and Cable B for the female Yazaki connector that interfaces with late 1995 and early 1996 Spydres.



Figure 4 - Cable "A"



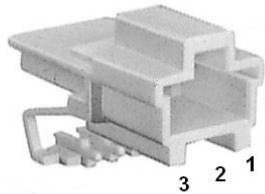
Figure 5 - Cable "B"

You will find the Spyder Datalink Connector (DLC) tucked behind the carpet at the base of the cowl near the floor. You will probably need to remove the door sill trim pieces in order to pull back the carpet and expose the connector. The 3000GT Spyder Manual references the DLC as connector C-91.



Figure 6 - Spyder DLC location

Early 1995 3000GT Spyders used the male Yazaki connector [7122-7830](#). If your Spyder's DLC uses this connector then you need to order Toplink Cable "A."



7122-7830

Toplink Cable "A"

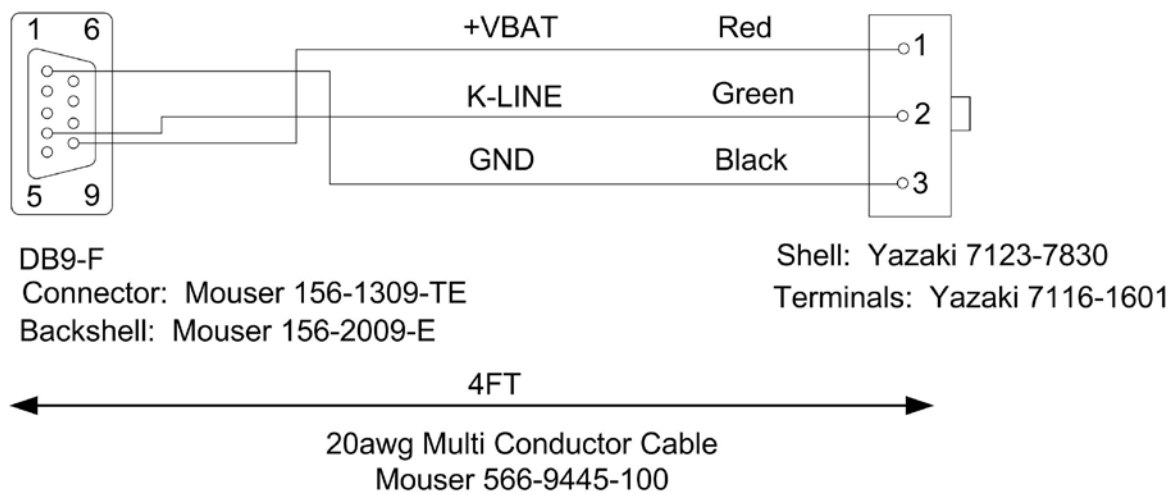
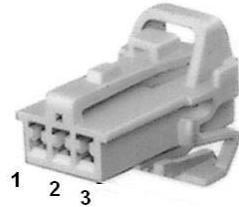


Figure 7 - Toplink Cable "A" Drawing

Late 1995 and 1996 3000GT Spyders used the female Yazaki connector [7123-7830](#). If your Spyder's DLC uses this connector then you need to order Toplink Cable "B."



7123-7830

Toplink Cable "B"

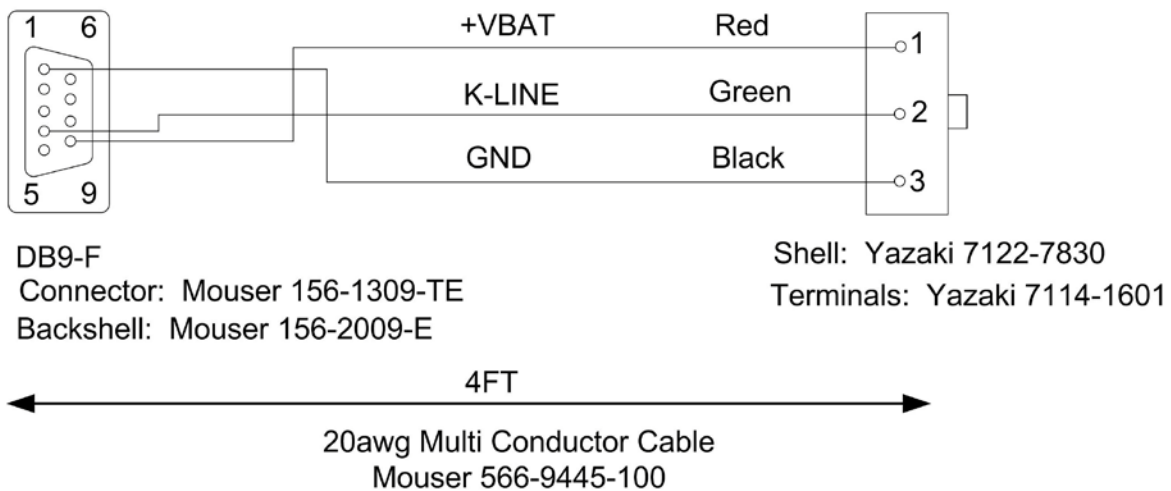


Figure 8 - Toplink Cable "B" Drawing

Appendix F: Evoscan Support

With the proper cable, the JNS Top_Link Module can provide connectivity to the OBDII port in the Spyder and facilitate logging and diagnostics using Evoscan.

OBD II Cable

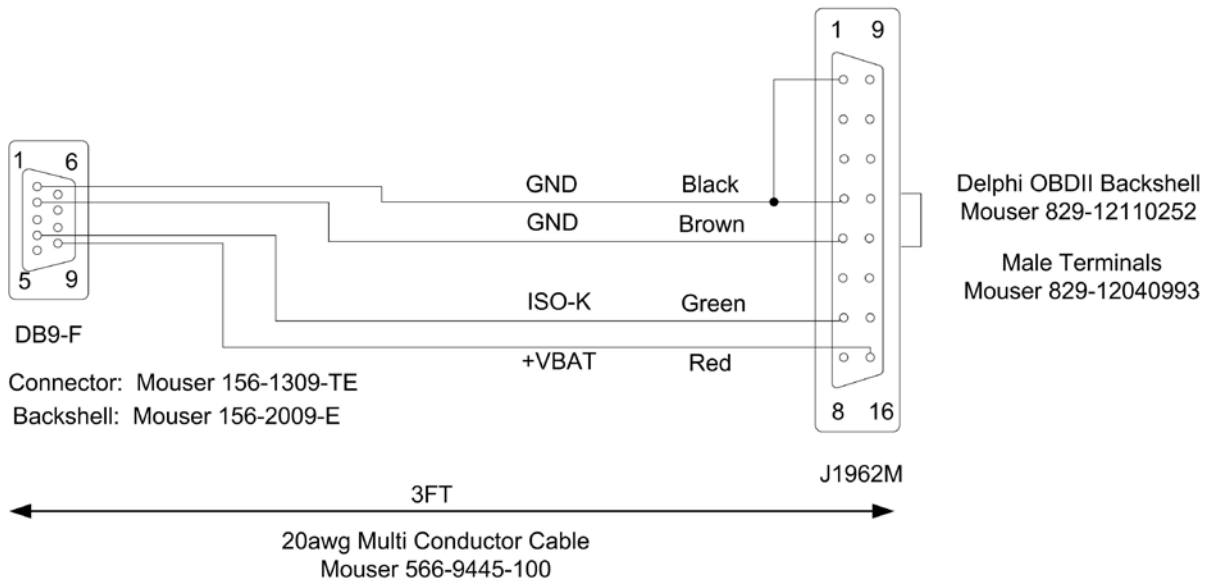


Figure 9 - OBD II Cable Drawing



Figure 10 - OBDII Cable

If you have run the software installation described in Appendix C there are no further settings to make. Evoscan will work with any COM port setting, not just COM1. Locate the OBDII port in the Spyder under the dash near the center console and plug in the OBDII cable.

If you need to purchase Evoscan software, please visit <http://www.limitless.co.nz/>

Start up Evoscan and press Start Datalogger. Evoscan should connect and highlight the Event Log box green.

